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NOTICE OF SOME OF THE INDIGENOUS MEDICINAL PLANTS OF CALIFORNIA.

By Gustavus L. Simmons.

California, heretofore rendered famous by her varied mineral deposits, will acquire a new and as worthy a name for her botanical treasures, whenever they are fully known. The discovery of the gigantic "*Washingtonia*" of her forests, which has excited the admiration of botanists throughout the world, may be called but one of a series of important discoveries in this science, which a faithful examination of her productions cannot fail to develope.

From the "Sierra Nevada" range of mountains to the Pacific Ocean, hardly a mile of land can be traversed which does not yield either some well known remedial agent, or a new specimen of apparently high medicinal power.

In Medical Botany there are known at present varieties of the Sarsaparilla, Scilla, Eupatorium, Mentha, Stramonium, Rhus, Salvia, Althea, Aconitum, and Anthemis; besides numbers of shrubs and trees, some of which have been supposed to be indigenous only to foreign countries. One of these is the "*Laurus nobilis*" or Bay tree, which grows in perfection within seventy-five miles of Sacramento. It attains the height of some ten or twenty feet. The leaves are highly fragrant, and the "bay water" distilled from them has their peculiar odor.

The "*Juniperus sabina*" (Savine) flourishes in the soil of the lower range of the Sierra Nevada. This is an evergreen of thirty feet high, and yields a large quantity of fragrant flowers.

The "*Cornus Florida*" also abounds in the same localities, and grows to the height of forty feet.

Among the indigenous medical plants of California there are two in common use which seem to possess virtues worthy of notice, the knowledge of which has been acquired by the Ameri-

cans from the native Californians or hunters. One of them is the Spanish "*Amole*" or soap plant.

This plant was noticed by "Fremont" and other writers on California for its saponaceous properties, but it has only been since the occupancy of the State by the American people, consequent upon the gold excitement, that a knowledge of its medical properties has been known.

Presuming it has been botanically described, (not having the authorities to certify the fact) I will merely give its chief characteristics only for the purpose of identification.

The "*Amole*" is a bulbous plant; leaves lanceolate, accuminate, radical, entire, glabrous from 8 to 12 inches in length; scape from 3 to 6 feet high; flowers white, in terminal racemes, panicles small; perianth tubular, 6 parted, 10 lines in length; ovary 3 celled; bulb perennial, 3 inches in diameter, 4½ inches long; scaly; external scales dark brown and fibrous, internal layers white and tender.

Habitat.—Neighborhood of lagoons, Sacramento Valley.

The bulb is the portion used for medical purposes. This, when broken apart and agitated with water, forms a soft and creamy mucilage, from which it has derived its name of "*Amole.*"

The mucilage resembles the "*Mucilago acacia.*" Boiling thickens it, and a solution of the subacetate of lead affords no precipitation.

It has a sweet taste, and leaves no unpleasant sensation in the mouth. Two drams operate as a laxative in from four to six hours.

Its principal use in California is as an external emollient application. Many Americans while travelling through the States have been poisoned by the "*Rhus toxicodendron,*" which grows there in great abundance. The poison from this article in California is generally of the most violent type, and the usual course of treatment has often failed to afford relief. Some persons when suffering from the malady were advised by the *natives* to make an application of "Amole," and after doing so found themselves relieved; until now the remedy is well established, and in common use.

Not only is it beneficial in subduing the inflammation consequent upon poisoning, but in all erysipelatous affections, and many

cutaneous diseases, it has proved itself a safe and reliable remedy. It is prepared by taking off the coarse external scales of the bulb, and grating the remainder in a close vessel, a sufficient quantity of water is then added, and the whole triturated until a thick mucilage is formed; this is strained through coarse muslin, and it is applied to the affected part in a similar manner to a *cataplasm*, at the same time it is administered internally as often as may be necessary to keep the bowels open.

"*La Yerba Resinosa*" (so-called by the Californians,) is another plant worthy of notice. It grows from 1½ to 3 feet high. Leaves, alternate, sessile, oblong obtuse, serrulate, deciduous, 2 inches long; flowers, collected into a dense capitulum; scales, setose, monaceous; diameter, 1 inch; color, orange yellow.

The leaves, head, and stem of this plant are covered with a transparent resinous substance, which has a strong aromatic odor, resembling somewhat that emanating from the balsam fir.

This resin is most abundant when the plant is in full flower. At these times if the finger is applied to the under side of the capitulum, and allowed to remain there for a few seconds, upon withdrawal the resin will be found adhering in long transparent strings.

It gathers in tears around the base of the scales, and is a source of inconvenience to the traveller, who is obliged to come in contact with it. The plant flowers from June until August, and its odoriferous properties are so strong and peculiar that the scent which at first seems pleasant, finally becomes disagreeable, and even sickening.

An alcoholic tincture of the leaves and flowers in the proportion of two ounces to one pint of sp. vin. rect., yields upon evaporation two drams of the resinous substance.

Obtained in this form, it presents a greenish black appearance, and retains the peculiar odor of the plant.

The medical properties of "La Yerba Resinosa" are those of a tonic *febrifuge*. The prevailing malady in California is intermittent fever. In some localities, at certain seasons of the year, no age or sex is exempt, and the discovery of an indigenous plant possessing the properties of the usual febrifuge remedies, cannot fail to prove a blessing, especially to those who reside at remote distances from cities and towns.

The usual manner of preparing this remedy is by decoction, although many make a tincture with some kind of alcoholic liquor.

The last method would seem to be preferable, as the resinous property of the plant is soluble in water only to a limited extent.

Its effects upon the system seem to be somewhat similar to those produced by cinchona, yet they more closely resemble those produced by the action of the Eupatorium perfoliatum. Given warm, even when a chill or fever is present it produces a profuse diaphoresis, and carried to any extent, catharsis, and sometimes emesis. It is used in dysenteries and diarrhœas, as well as fevers; and as these maladies in California are usually more or less complicated with intermittent symptoms, it is given with considerable benefit.

From its abundance and apparently high medicinal virtues it is to be hoped that medical men generally will test its efficacy, and if it does possess the attributed properties, have it placed in a prominent position in our *Materia Medica*.

Sacramento, Cal., Aug. 15th, 1854.*

PHARMACEUTICAL OBSERVATIONS ON BUCHU.

By Henry N. Rittenhouse.

(*Extracted from an Inaugural Thesis.*)

The author, after describing the botanical characters of the plant, refers to the analysis of Brandes and Cadet. The former found *pale yellow volatile oil*, 0.88; *resin*, 2.34; *bitter extractive* (diosmin,) 3.78; chlorophylle, 4.77; gum, 12.71; *lignin*, 45; *brown substance, extracted by potash*, 1.56; *nitrogenous matter, extracted by potash*, 2.42; *albumen*, 0.58; *malic acid*, 1.56; *various salts, bassorin, water, &c.*, 20.54; *acetic acid and loss*, 3.86.

Brandes attributes the activity of buchu to the volatile oil chiefly, and to the diosmin or bitter extractive.

*[This communication was elicited by a request from us that the author would give some account of the indigenous medical plants of California. We trust he will continue the subject as his leisure permits. If our friends in other sections would write us occasionally about what they observe, much interesting matter would find a place in our pages.—Editor.]

Cadet's analysis gave *volatile oil*, 0.665; gum, 21.17; extractive, 5.17; chlorophylle, 1.10; resin, 2.151; lignin &c., 69.744.

The author obtained a highly volatile oil by distilling the leaves with water. It had a mint-like odor, reddish-brown color, and aromatic, warm, pungent taste, with a sweetish rather pleasant after taste. It is yielded in the proportion of $\frac{1}{8}$th of one per cent. This volatile oil is lighter than water. In distilling buchu, the oil comes over with the first portions of water, and hence the process should not be continued too long. He also "obtained an extractive matter by precipitating the alcoholic and watery solution by infusion of galls. It is dark green, slightly bitter, nearly odorless, insoluble in cold water, but soluble in alcohol, ether, and a weak solution of carbonate of potassa."

The author then alludes to the medical properties of the drug and the several pharmaceutical preparations which have been suggested, and makes the following critical remarks on the published formula for the fluid extract of buchu, viz:

A preparation called "The Fluid Extract of Buchu" was suggested by Prof. William Procter, Jr., of this city, who published a formula for it in the American Journal of Pharmacy, vol. xiv. page 86, of which the following is a copy:

"Take of Buchu leaves,	℥viij. (Troy.)
Alcohol,	f.℥xvj:
Water,	q. s.

Reduce the leaves to coarse powder, moisten them in a covered vessel with f.℥ 12 of the alcohol, macerate them for six hours, and introduce the mass into a suitable displacer. When the clear fluid has ceased to drip, add the remaining alcohol mixed with four fluid ounces of water gradually, until the displaced alcoholic liquid amounts to twelve fluid ounces, which is set aside until reduced to six fluid ounces by spontaneous evaporation. The residue in the displacer is then treated with a pint of cold water by maceration for twelve hours, and subjected to pressure until a pint of fluid is obtained. (Displacement may be resorted to, but the mucilage renders it ineligible.) This is evaporated to ten fluid ounces mixed with the six fluid ounces of evaporated tincture, and after occasional agitation for several days may be filtered or strained to remove the undissolved resinous and gummy matter. Thus prepared it had a dark brown color, a strong and rather pungent taste of buchu, and is administered in the doses of one or two teaspoonsful, which represent one half or one dram of the leaves. Another extract was prepared by him by evaporating the tincture to four fluid ounces,

the infusion to eight fluid ounces, and then dissolving in the mixture eight ounces of powdered sugar by agitation."*

Another preparation, called "The Compound Fluid Extract of Buchu" has been prepared, but it does not seem to have the odor or taste of the leaves very strongly marked. In view of the increasing popularity and demand for fluid extracts, both among the medical profession and the public at large, on account of the more or less entire absence of alcohol, the smallness of the dose, and the more certain effects of the medicine; the volatile principles being rarely submitted to the action of heat, and preparations of this class being thus more perfect representations of the drugs employed than almost any other; I have been induced to prepare a fluid extract of buchu that should possess all the above advantages, for buchu is known to possess valuable remedial properties which have been, as far as I can learn, very much laid aside without great cause, and other medicines substituted which are less certain. The following is the formula which I have found most successful in producing a perfect preparation:

Take of Buchu in coarse powder,	℥viij.
Ether,	f.℥vi.
Carbonate of potassa,	℥ss.
Alcohol,	
Water,	of each a sufficient quantity.

Add a dram of the carbonate of potassa to the powdered leaves, then the ether mixed with one pint of the alcohol; having incorporated them thoroughly, allow them to macerate twenty-four hours, then transfer the whole to a percolator, and pour on diluted alcohol until a pint of ethereal liquor is obtained, put this into a suitable vessel and allow it to evaporate spontaneously until reduced to four fluid ounces. Upon the mass in the percolator pour on water mixed with one fourth its bulk of alcohol, and holding the remainder of the carbonate of potassa in solution until the percolated liquor amounts to a pint; remove the dregs and express

*[The process which we have followed for several years past is a modification of the original, which consists in substituting diluted alcohol for water in the latter part of the process as in the *officinal* formula for the fluid extract of valerian. The resulting fluid extract is rather more alcoholic than the original, but retains more of the oleoresinous principles.—Editor.]

them until another pint is obtained, washing them with water, if necessary, to make up the measure; mix this with the pint last obtained, and evaporate on a water bath to four fluid ounces; add this to the four ounces left after the spontaneous evaporation. The resulting fluid extract should measure eight fluid ounces; if less than that, the deficiency can be made up by the addition of diluted alcohol. Fluid extract of buchu as thus prepared is of a dark green color, and has the odor and taste of the leaves in a concentrated form. I have tried several ways of making this extract, but have found none so satisfactory as the above. The first was with twelve fluid ounces of alcohol and four of ether to eight ounces of leaves, mixing the alcohol and ether with the buchu without previous maceration, then displacing a pint by the addition of diluted alcohol. Set this aside to evaporate spontaneously until reduced to four fluid ounces. Upon the mass in the percolator I poured diluted alcohol until ten fluid ounces had passed, and evaporated this in a water-bath to four ounces, then mixed them; this was of a very dark color, and tasted quite strongly of the leaves; but in evaporating spontaneously, a resinous matter was deposited on the sides of the evaporating vessel and would not mix smoothly with the extract.

I next made an extract according to the above formula, to which I added an ounce of sugar to an ounce of extract; this did not possess any advantages over the other. Another was then prepared in the same proportions as before, and conducted in the same manner in the first part of the process, but to the mass in the percolator I added water, holding carbonate of potassa in solution; this was allowed to percolate twenty-four hours, then expressed, and evaporated to the same quantity as the first, and mixed.

The object of adding carbonate of potassa is to dissolve out two substances noticed by Brandes, and called by him brown substance extracted by potash, and nitrogenous substance extracted by potash. Ether and alcohol I supposed would dissolve the volatile oil and resin, and the presence of the alkali in the watery infusion prevents its subsequent precipitation. Water, according to the same chemist, dissolves the bitter extractive, or what he terms diosmin, which he says is insoluble in alcohol and ether but soluble in water. I found an advantage in adding a

portion of the carbonate of potassa with the leaves while macerating, for I think it prevents the deposition of any resinous matter on the sides of the vessel during the evaporation, which otherwise takes place, producing some loss. The addition of alcohol to the water in the proportion of one-fourth its bulk, was done from the fact that many vegetable substances are more easily percolated when the acting menstruum contains a little alcohol, and the above proportions have been found to answer very well in practice. Some addition of this kind was rendered necessary on account of the mucilaginous nature of the plant in question, which, otherwise, is ineligible for the process of displacement, as it takes place very slowly, requiring much time to perfect it. During the evaporation of the alcoholic and watery extract a semi-fluid matter separates on the top, it has the consistence of coagulated albumen, is of a dark green color and scarcely any odor, it does not redissolve in the liquid from which it separates. It dissolves slightly in cold and boiling water, is less soluble in cold and boiling alcohol, and entirely insoluble in ether. The watery solution of this was of a yellowish brown color; sulphuric acid changes it to a reddish brown, solution of sub-acetate of lead threw down a copious greenish white precipitate, tannin produced no change; when dry it is brittle, and swells up when macerated in cold water for a length of time, and finally dissolves.

The dose of this fluid extract is from one half to one fluid dram, to be repeated as circumstances require, for one fluid ounce of extract represents an ounce of the leaves. In a case that came under my notice of an affection of the kidneys, it was used in teaspoonful doses three or four times a day, and at the end of one day the patient experienced considerable relief and has continued to use it ever since on a return of the complaint. The following is a statement of another case of Dr. O. H. Taylor's, of Camden, N. J., to whom I presented some of the fluid extract for trial. He says in his letter to me, dated Nov. 4th, 1853: "In the month of July last, I was requested to visit Capt. D** B*****, aged 84 years. At the time of my visit he was suffering from a painful and irritable state of the bladder, with frequent disposition to micturition, and occasionally an inability to pass water for several hours; this alternate state had existed with him, more or less, for two or three years. From the history of

his case, I have been led to the impression that irritable condition of the bladder was induced sympathetically by functional disease of the kidneys, and partly connected with a morbid condition of the prostate gland and surrounding parts. Whatever may have been the pathological condition of the parts throughout in the case, it will be sufficient for me on the present occasion to say, that notwithstanding my having resorted to the usual diuretics and other remedial agents without the success I desired, I was, through your suggestion, induced to make trial of the fluid extract of buchu. I directed a fluid dram to be given three or four times daily. This course was continued until my patient had taken five or six fluid ounces. The relief was gradual from day to day, until the patient was finally relieved. Capt. B***** assures me that he considers himself effectually relieved, insomuch as he has up to the present time had no return of his distressing symptoms." Before closing this thesis I would briefly state the advantages which I conceive the fluid extract above proposed possesses over any other preparation of buchu.

In using infusion of buchu more or less of the volatile oil is unavoidably dissipated, and the resinous matter probably nearly all left behind undissolved. This objection applies with even greater force to the home-made infusion often ignorantly prepared, and still more to the solid extract, which must be nearly inert. The tincture of buchu probably contains most of the active matter, but has the stimulant and irritating properties of a large proportion of alcohol to a very small proportion of the remedial agent. Neither of the fluid extracts which have been already put before the public appear to me to possess to so great a degree as the one I have above proposed the sensible and active properties of the buchu, and one of them in particular seems very deficient herein. On the other hand this fluid extract has the volatile oil and resinous matter taken up by the ether and alcohol, with sufficient carbonate of potassa to retain them in solution afterwards, and the bitter extractive of Brandes with the brown substance and nitrogenous substance mentioned by him, taken up and retained by the alcoholized water holding the carbonate of potassa in solution. At the same time the quantity of this alkaline salt in each dose of the extract is so small as not to be likely to interfere

with the remedial effects of the medicine, but on the contrary it is believed will be found to be a useful adjunct to the diuretic property.

ON GILLENIA TRIFOLIATA—AMERICAN IPECACUANHA.

(Review of Theses.)

On Gillenia trifoliata.	By John H. Ruch.
Idem.	By Joseph L. Lemberger.
Idem.	By John Wyeth.
Gillenia trifoliata as compared with Ipecacuanha.	By David Lewis, Jr.

For many years past it has been the constant aim of the Professors in the Philadelphia College of Pharmacy to persuade the candidates for graduation to select as subjects for their theses, either articles of a chemical nature, or else those calculated to develope and bring into more general notice our indigenous medical plants. Of the success of these efforts, the pages of this Journal have afforded convincing proofs. It is true that, in many instances, the published analyses will not bear a strict comparison with the splendid results obtained in European laboratories from analogous subjects, yet, bearing in mind the difficulties under which the American student of Pharmacy labors, there is much reason for being gratified with what has already been accomplished in the analytical study of our native plants.

The subject of the present article was suggested to the class of last year, and as the result, four theses were presented for examination. A comparison of these proves by the harmony of the general results the accuracy of the operators, and by the difference on some points, the fact that each experimenter proceeded without the knowledge of the plant being investigated by any other than himself.

Of the processes for obtaining the more common and unimportant constituents of the powdered root it is unnecessary to speak, since they are well known to pharmaceutists. In the following summary, therefore, they are passed over.

Starch.—The presence of this principle, as revealed by the iodine test, is announced by all of the experimenters.

Gum was detected by all but Mr. Lewis, who doubts its presence.

ALBUMEN is shown to exist by the experiments of Messrs. Ruch and Lemberger.

VOLATILE OIL is supposed by Messrs. Lewis, Ruch, and Wyeth to be present in small proportion, from the fact that water distilled from the root assumes a milky appearance, although no globules separate upon standing. This, however, may be owing to the small quantity of the root employed in each instance. Mr. Lewis washed a portion of the distillate with ether, and thereby rendered it transparent.

WAX and FATTY RESIN were found by all; the former having been obtained from the alcoholic, and the latter from the ethereal extract.

LIGNIN is spoken of by Mr. Lewis, and

COLORING MATTER by Messrs. Ruch and Wyeth.

GALLO-TANNIC ACID was detected by Messrs. Lewis, Ruch, and Lemberger by the blue-black precipitate afforded with the tincture of chloride of iron (which was not dissipated by heat) and by a precipitate with gelatine. Mr. Wyeth considers it as gallic acid.

LIME AND POTASSA were obtained from the ashes by Messrs. Wyeth and Lemberger.

IRON was found in the ashes by Mr. Lemberger's experiment of treating the lixivated ashes with diluted muriatic acid, and adding a solution of ferro-cyanuret of potassium, when a Prussian blue precipitate was produced.

PECULIAR PRINCIPLE.—Each of the experiments seems to have adopted the idea of the existence of a close analogy, if not of an absolute identity between the active principle of this plant, and that procured from the officinal ipecacuanha. Hence the mode of procedure for obtaining it was essentially that of the Paris Codex for impure emetia. That is, by treating a concentrated alcoholic extract with cold water, filtering the solution, and evaporating nearly to dryness. This plan was tried by Messrs. Lewis and Lemberger, and afforded an active extractive matter. The syrupy aqueous fluid being spread on panes of glass and dried by a moderate heat.

The same gentlemen, as well as Mr. Ruch, subjected the powdered root to the action of ether, (in a second series of experiments,) to remove the fatty matter, before making the alcoholic and watery extracts. The value of this seems doubtful; for Mr.

Lewis says, "this preliminary step (the addition of ether) appears to be hardly necessary, however, and in some operations was dispensed with as superfluous." In fact, as Mr. Ruch declares that the alcoholic watery extract, prepared like the impure French emetia, is soluble in ether, there is some reason for supposing that the previous action of the ether, if added freely, is injurious, since some of the active principles may also be taken up and lost. The third experiment of Mr. Lemberger confirms this view. He digested "eight ounces of coarsely powdered root for several days in sulphuric ether, and then displaced it by frequent additions of the same menstruum until it passed through colorless." The residual powder was displaced with alcohol to get the alcoholic extract, and this in turn dissolved in water and evaporated down, when a "product not exceeding one grain in weight" was obtained.

If there was no fallacy in the experiment, ether must be a good solvent, capable of taking up and holding the active principle in solution; otherwise more than one grain of extract would have been obtained from half a pound of the root. Mr. Wyeth adopted the following plan for concentrating the active principles. "Adding to a portion of water acidulated with sulphuric acid, the cortical portions of the root; digest in a water-bath for twelve hours, then filter, add carbonate of lime to saturation and again filter. Digest the residue left on the filter with alcohol, filter the liquor thus obtained, mix it with the former liquor, and then evaporate to consistence of an extract. Treat with water, then filter the resulting liquor and evaporate." The same experimenter says: "A portion of alcoholic extract treated with water was of a nauseous, bitter taste, but not so decided as that obtained by acidulated water in the process mentioned above."

PROPERTIES OF ALCOHOLIC WATERY EXTRACTIVE.—It is in scales of a light yellowish-brown color, transparent and deliquescent; of a bitter, nauseous taste, leaving an acrid impression in the fauces; soluble in water, alcohol, and ether (?); and affords precipitates with solution of tannin, acetate and subacetate of lead, and nitrate of silver. It appears to be nearly neutral in its reactions.

REMEDIAL PROPERTIES.—Mr. Ruch says the extractive "proved emetic in the dose of three grains, administered in divided doses."

Mr. Wyeth remarks that two grains of his extract from acidulated water produced nausea and diaphoresis. Mr. Lewis "dissolved a grain and a half in a fluid ounce and a half of water, and swallowed it in half ounce doses at intervals of a few minutes. Great nausea attended with emesis ensued. Its unpleasant effects continued the remainder of the day." Mr. Lemberger's personal experience was precisely similar, namely, that in doses of one grain, repeated at intervals of fifteen minutes, the extractive acts as a nauseant and emetic.

On the whole, conclusive testimony is furnished by the foregoing analyses of the intrinsic value of the Gillenia trifoliata, and of the facility of making concentrated and active preparations from it, that would compare, perhaps, not very unfavorably, in mildness and certainty of operation with those from the South American plant.

The researches of the authors of these theses were partly designed to prove the similarity of the North and South American ipecacuanhas. But it cannot reasonably be inferred that the same principle exists in both; since the respective plants are derived from two entirely distinct natural orders, the Rosaceæ and the Cinchonaceæ of Lindley. A failure to prove identity, however, is no cause of regret, more especially, if the very experiments instituted for that purpose afford a moral certainty that there is a distinctive principle in the Gillenia trifoliata.

Three of our experimenters made some attempts to determine the fact, but a small supply of the root prevented its accomplishment; and it is left to some future operator to separate from the alcoholic watery extractive above described, the active principle of the Gillenia trifoliata. R. P. T.

ON A NEW VARIETY OF FLAXSEED.

By William Procter, Jr.

During a recent visit to Cincinnati, Mr. Edward S. Wayne showed me, in the cabinet of the College of Pharmacy, of that city, a specimen of flaxseed, differing in appearance from the common brown seed, it having a greenish yellow color instead of the well marked deep brown of the ordinary drug. In size, shape, and lustre they appear to be quite alike. The history of this

variety of flaxseed is clearly traced, and Mr. Wayne has kindly given it to me, as follows:

Mr. E. Everingham, who resides about fourteen miles east of Piqua, Miami County, Ohio, in 1846, observed in his field of brown flaxseed, *one stalk* with white blossoms, and taller than the rest of the field. He carefully marked the place, and on gathering the seed, when ripe, found it, to his surprise, to be entirely different from any he had ever seen. Next season he sowed it in his garden, but the plants were nearly destroyed by worms, yet he succeeded in gathering about a teacupful of the seeds. From that time it succeeded well, and proved to be more productive than the brown seed. The first seed sold was to Messrs. Sawyer & Jackson, of Piqua, for $3 per bushel, and another lot at Urbana, Champlain County, at $4 the bushel. Messrs. Sawyer & Jackson, who have had considerable experience in manufacturing oil from it, still give it the preference over the brown seed.

At the State Agricultural Fair, held in Cincinnati, in 1850, a premium was awarded for it as a new and valuable variety. The crop of seed this year is estimated at about fifty thousand bushels, which speaks well for its productiveness. Mr. Wayne was informed that it takes three pecks of brown seed to sow an acre, and of the white variety but two pecks is required, the product being equal.

At first sight this variety of flaxseed might readily be taken for canary seed, but on closer inspection it will be found to be lighter in color, flatter, and not so pointed. When bruised in a mortar with a little water they afford a stiff, ropy, mucilaginous paste, having very little color, with the peculiar odor of ordinary flaxseed. One hundred parts of the powdered seeds afforded to ether, 32 parts of oily residue. Macerated in cold water they communicate a mucilaginous consistence to it, and the mucilage affords precipitates with alcohol and subacetate of lead precisely as that of ordinary flaxseed mucilage. In fact, from the slight examination to which it has been subjected, the absence of the brown coloring matter appears to be the only difference. The absence of color is an advantage in favor of its use in medicine, as the meal produced affords a cataplasm less repulsive in appearance. It is probable that the oil it contains is less colored, which is a desideratum to the painter.

ON EUPATORIUM PERFOLIATUM.

By Mortimer H. Bickley.

(Extracted from an Inaugural Essay.)

There are several valuable items of the Materia Medica which are constituted so peculiarly that they puzzle the chemist in his attempts at seizing on and isolating the principle or principles which give them activity, so as to say with certainty what is and what is not worthy of such a character. Mr. Bickley has chosen one of this class which has frequently been tried before by essayists. The following remarks are condensed from his thesis.

Eupatorium contains a large amount of matter soluble in cold water, as, when exhausted by that fluid, it yields 40 per cent. of extract. The cold aqueous infusion was found to contain a little *tannin*, *gallic acid*, *albumen*, *gum*, and saccharine matter.

The residue, dried and percolated with alcohol, afforded on evaporation an extract, consisting of chlorophylle, wax, resin, etc.

A new portion of the flowering tops and leaves, when distilled with water, afforded a slightly milky, odorous distillate, which was considered as containing volatile oil.

When a strong tincture is thrown into water a resinous matter precipitates.

The ashes of eupatorium contain carbonates of potassa and lime, and oxide of iron.

With a view to isolating the bitter principle, Mr. Bickley employed the process of M. Lebourdais. A quantity of cold infusion was prepared from the powdered eupatorium, and passed slowly through a thick layer of purified animal charcoal, as long as it was deprived of color and taste. The charcoal was then washed with water, dried and treated with boiling alcohol of 95°. The alcoholic liquid was filtered and evaporated until reduced to a light brown, extremely bitter extract soluble in ether, but slightly in water.

Its alcoholic solution by slow evaporation deposits a yellow, slightly crystalline substance, extremely bitter and nauseating. Mr. Bickley did not proceed further in his experiments, so as to determine the nature of this yellow matter, which is to be regretted, unless himself or some other investigator will commence where this essay leaves the subject, and explore it thoroughly.

REMARKS ON CUPREOUS SODA WATER, WITH COMMENTS.

To the Editor of the American Journal of Pharmacy.

Dear Sir,—I saw an article in your last journal upon the "*Poisonous Effects of Soda Water from copper fountains and lead pipes*," by J. Ogden Doremus, M.D., in which he states that he "procured several gallons of the favorite beverage and submitted it to chemical examination." The substance which first attracted attention was copper. "This was very abundant in soda water obtained from several obscure shops, where it was presumed the traffic was limited, and, consequently the acid water remained longer in the copper condensers." Persons who are not altogether ignorant of the process in which soda water is made are aware of this important fact. It is a fact evident that if soda water be left standing in the copper fountains for any length of time, even a day, it will become impregnated with the copper, especially if the fountain is not lined with tin. Dr. Doremus says "that a large portion of the soda water which he submitted to chemical examination was procured from obscure shops, where, it was presumed, the traffic was very limited." In such instances it is highly probable, simply from the important fact that it was limited to such an extent that it would not *pay* to have the fountains re-tinned every year, and new pipes re-fitted, therefore persons should be very cautious about drinking soda water at all such establishments. Persons who are fond of the beverage should, in all instances, get it from the more respectable establishments, where the trade is very large, as, for instance, I have known Messrs. * * * * *, apothecaries, of St. Louis, to dispense from fifteen hundred to two thousand glasses per day. In an instance of this kind the soda water remains in the condenser only a very few hours, and it has been submitted to chemical examination and was found to be perfectly pure.

Dr. Doremus says, "that he was informed by a resident of St. Louis that, while the cholera prevailed, most persons abandoned the use of soda water. It was a common remark that Mr. —— took a glass of soda water and was immediately attacked with cholera." This is all very true, but it was only when Mr. —— took a glass of soda water at one of those obscure establishments which are very numerous in St. Louis.

Edwin R. Swann.

St. Louis, Sept. 11th, 1854.

Remarks by the Editor.—In publishing the above letter it is with some doubts as to its utility, yet, as in the preceding number, page 422, we introduced the paper of Dr. Doremus, (which has called it out,) without comment, it is proposed now to add a few observations. The leading point in Mr. Swann's letter is, that soda water can only be obtained in good order from stores whose

reputation for the sale of the beverage enables them to dispose of it quickly, thereby tacitly admitting that even such stores are liable to, if not obliged to, employ apparatus unfit for the purpose, did not the short contact of the fluid render any ill effects from it impossible, and, of course, carrying the inference that in small establishments it would be almost impossible to prevent the sale of cupreous soda water. If this idea was acted on, consumers would be compelled to go to a few establishments for supply, on the penalty of being poisoned otherwise. Now we believe it is quite possible that good carbonic acid water can be furnished by vendors whose sales do not amount to more than one or two fountains per week, as we know by trial that in thoroughly tinned fountains, with proper tubes, etc., the water may be kept for weeks without cupreous impregnation. The difference all turns on the conscientiousness of the manufacturer in attending to the retinning of the fountains at proper intervals, and on the pharmaceutist in proper attention to the tubes, stop-cocks, and other portions of the apparatus belonging to him. There is no difficulty in ascertaining the condition of soda water if the apparatus is in fault. The addition of a few drops of solution of yellow prussiate of potash to a glass of the suspected soda water, placed on a white marble slab, or a sheet of paper, will occasion no change if pure, but if even a minute portion of copper is present, some shade of purplish brown will be manifest on looking down through the fluid, amounting, in many instances, to such a depth of color that the ferrocyanuret of copper separates in flocks. In order to ascertain whether it is the draw-cock, the cooler, or the fountain that is in fault, let the operator draw say half an ounce of the water from the tube connecting the draw-pipe with the cooler, then a portion from the cooler, and a third portion from the fountain directly. Let him then fill test tubes of equal dimensions with each specimen, and add a few drops of the test solution to each, as long as it causes coloration. By comparing the tubes, especially by looking down through the liquid with the tubes held on white paper, it can readily be seen which has the greatest depth of color, or whether the coloration is equal in all; if the latter, the fountain is probably most in fault; if the former, the fountain may be either less faulty, or in some cases faultless, in which instances the water drawn from it gives no coloration at all.

In our opinion mineral water should only be sold by persons who know how to test it and have the means at their disposal; hence apothecaries are, as a general rule, better qualified than confectioners, grocers and others; yet so extremely careless are some apothecaries of their apparatus, that often, without being aware of it, they vend cupreous mineral water and occasion inconvenience to their customers. The simple test above given should be known and regularly applied by all who sell this beverage; and as the apparatus used at most of the small dealers is owned by the manufacturers, and hired to the dealers, the latter should protect their reputations by insisting on having the water capable of standing the test above noticed after two days in use. We believe the source of the dissolved copper is more frequently in the cooler and stopcocks than in the fountains, and where these belong to the vendor of the water the remedy of course rests with himself.

As regards the use of tinned copper fountains there is no real objection, provided they are kept properly tinned. It would be a great improvement, if, as suggested by Dr. Doremus, these vessels were made in two sections or hemispheres, with flanges securely bolted together with gutta percha or gum-elastic packing between, so that the druggist himself could inspect their interior when desirable. The chief cause of the use of imperfectly tinned fountains is the expensiveness of re-tinning them, and the difficulty of inspecting their interior, owing to the solder joint. For the reason of its tenacity, durability and lightness, copper is greatly preferable to the other metals for this kind of apparatus where it has to be transported from the manufacturer to the retailer, and it is worthy the attention of our druggists and coppersmiths whether fountains cannot be eligibly constructed so as to be taken apart at will, and rejoined by bolts? We will suggest, as an improvement, that the lower section of the fountain be a cylindrical vessel strengthened by iron bands, with a hemispherical bottom, and furnished with a horizontal flange above. The upper portion to be a simple hemisphere of dimensions similar to the other, with a flange to fit that of the other portion, and the two brought together on a ring of gum elastic packing cloth, by means of a pair of ring clamps, with screw bolts, at intervals of three or four inches around their circumference. The stopcock should of course sur-

mount the upper hemisphere, and it would be well that the tube descending from it to the bottom of the fountain should be entirely of block tin, if it could be supported in any way compatible with the amount of motion and jarring to which the fountains are subjected during transportation. One difficulty in the way is the necessity of using brass stopcocks. Although the interior surface can be tinned it is more liable to become exposed and is more difficult to inspect than open surfaces. In reference to the tubing for connection there is no difficulty in having the short connection from the drawcock to the cooler of silver or, at least, of tin; but that from the fountain in the cellar to the cooler, a distance of seven to ten feet, the necessity for some substitute for lead is not so easily overcome. We have used gutta percha tubing for several years past, but it is liable to crack longitudinally near the connecting joint, and, at first, in the experience of some, gives a peculiar taste to the water, which, however, ceases by use; block tin is better, or lead lined with tin. Mr. Simes of this city, who we believe manufactures his own carbonic acid water, employs cast-iron fountains lined with enamel, which are unexceptionable, so far as we know, when they are not to be transported, their great weight rendering them ineligible in that case. Such fountains are hung on lateral pivots, like a cannon with its mouth up, which enables the operator to agitate their contents when desirable.

Although we do not think the sweeping remarks of Dr. Doremus are quite correct, yet we believe they will do good by directing the attention of the public, as well as the vendors, to the subject, and cause better arrangements to be adopted and more care exercised.

REMARKS ON THE CALIFORNIA NUTMEG.

By Pro. Joseph Carson.

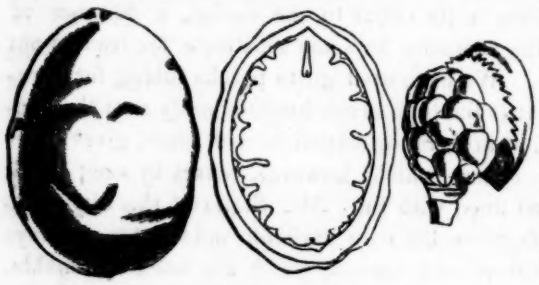
September 15th, 1854.

To Daniel B. Smith, Esq.:

Dear Sir,—When last I saw you I promised to write to you upon a subject which then interested us, the so-called California nutmeg, which had been introduced into the market. I have since been enabled to examine thoroughly into the matter, and find that I was right in the statements made to you at the time, but engage-

ments and duties have prevented me from fulfilling my promise of communicating to you the result of further inquiries.

It is a singular circumstance that at the time of appearance in the Atlantic cities of the article referred to, another product, resembling a nutmeg, should have been accurately described, both in this country and England, a native of California. I refer to the fruit of the *Torreya Californica*, which has been described with the plant from which it is derived, by Prof. Torrey, in the N.Y. Journ. of Pharmacy, and transferred to the pages of the American Journal of Pharmacy, and which has simultaneously almost been described and figured under the name of *Torreya myristica*, by Sir W. Jackson Hooker, in the Botanical Magazine. This fact has led to the mistake of attributing the drug in the market to the same plant, and supposing it to be a true native Californian. Through the kindness of Dr. Torrey, I have examined the fruit of the Torreya, and find that it is to a certain extent similar, but at the same time so unlike as to lead to no difficulty in determining the true origin of either; the resemblance to a nutmeg which the fruit of Dr. Torrey's plant presents, is sufficiently remarkable to have given rise to the appellation "California nutmeg."



Fruit of T. Californica vel Myristica.

You will recollect I stated to you that in the nutmeg which had been introduced, I recognised an old acquaintance, having had specimens in my possession during nearly twenty years, which had been given to me by our late friend, Dr. R. E. Griffith, and by whom a reference had been made to it in his interesting Botanical Notices published in the early numbers of the Journal of Pharmacy. You will find it noticed in the 6th vol., page 22, under the name *Myristica tomentosa*. The inspection of this article, enclosed as it is in some of the specimens by its arillus, will show at once that it is a true Myristica and not a Taxoid. When conversing with Mr. Charles Wister, of Germantown, upon the subject, he told me that

this variety of nutmeg had been known to him for forty years, the first specimen he had seen having been brought from Calcutta by Dr. Bullock, so long ago as the period mentioned.

Dr. Wood, in the Dispensatory, has reference to the same article, when mentioning a kind of nutmeg which is distinguished from the common kind by its "much greater length, elliptical shape," &c., and states that it has been called *wild nutmeg*, the other being designated as *cultivated nutmeg*. In fact, it would seem that from time to time it has appeared as an article of commerce in small quantities, and had been overlooked by those who have recently encountered it under the promising title of California nutmeg. It certainly has been brought from that new section of the United States in company with the fruit that resembles it, and the only solution that presents itself to me of its appearance there, is that it may have been introduced by the Chinese who have sought the Pacific coast in quest of gold.

By referring to the section upon nutmegs, in the last edition of Pereira's *Elements of Materia Medica*, we find that the fruit under consideration has long attracted scientific curiosity; it is described and figured as the *long* or *wild nutmeg*. By the author mentioned, it is attributed to the *Myristica fatua*, Houtt, Blume. It is the *Nux moschata fructu oblongo* of C. Bauhin, and the *Nux myristica mas* of Clusius, a native of the Banda Isles.

Wild nutmeg.

The fruit of this plant is "elongated, ellipsoidal rusty *tomentose*. Seed elongated, ellipsoidal, covered by a membranaceo-fleshy, orange colored, insipid arilloid, (mace); outer coat (testa) dark brown, hard; nucleus acerb, slightly aromatic, grayish ash colored, cylindrical, ellipsoidal, rugous, marked by a furrow." This description is accurate, with the exception of the flavor, both of the mace and kernel of the fruit, which may, however, vary in the samples that at different periods have been brought.

Hoping that the foregoing communication will satisfy you of the correctness of my conclusion,

I remain very sincerely,

Your friend, J. Carson.

ON THE VOLATILE OIL OF ERIGERON CANADENSE.

By William Procter, Jr.

This volatile oil has recently been introduced into medical practice by the "Eclectic" physicians, who esteem it for its medicinal powers. The specimen of the oil submitted to examination was labelled "Oil of Erigeron, American Chemical Institute, New York." It has a light straw color, is very limpid, has a peculiar aromatic, not unpleasant odor, somewhat analogous to oil of hemlock (Abies canadensis,) which is extremely persistent; its taste is peculiar, mild and not very pungent. Its density very low, being according to the mean of two careful observations .845; it is very inflammable, burning with an abundant sooty flame, begins to boil at the temperature of 310° Fahr., and continues rising till 365°, showing that there must be two volatile oils. It distils *per se* unchanged and colorless, leaving a small oleo-resinous residue in the retort, which is probably oxidized oil. When a globule of potassium is thrown into the commercial or the recently distilled oil, it acts on it with the elimination of gaseous matter (hydrogen ?) from the entire surface of the globule, and the action continues until the metal disappears. The oil at first assumes a reddish brown color, which becomes deeper and finally causes a gelatinous residue, to separate which is probably a resinate of potassa. The oil is, therefore, highly oxigenous.

Hydrate of potassa acts on oil of erigeron slowly, turning it of a reddish color. Powdered iodine combines with it without explosion. Fuming nitric acid at ordinary temperatures acts slowly; but when heated explosively; sulphuric acid instantly decomposes it. The oil is very soluble in ether and anhydrous alcohol, but moderately in commercial (.835) alcohol.

The volatile oil of Erigeron canadense, when taken internally, acts as a stimulant carminative, like many of the milder volatile oils, but it is also said to possess a peculiar and efficient power as an anti-hæmorrhagic, especially in uterine hæmorrhage. It has been found useful (American Eclectic Dispensatory, page 451,) in diarrhœa, dysentery, hemoptysis, hematamesis, menorrhagia, and externally mixed with castor oil or stramonium ointment in hæmorrhoids.

The dose internally is from 4 to 10 drops, mixed with sugar and water. In uterine hæmorrhage the dose should be repeated at short intervals (10 or 15 minutes,) till relief is obtained.

OIL OF WORMSEED.

MR. EDITOR,—I noticed a communication on oil of wormseed, in the last number of your Journal, by Samuel S. Garrigues, of Gottingen. He states, "two kinds of oil are found in the American market, one under the name of Baltimore, and the other called Western Wormseed Oil. Each is sold at a quite different price, though no difference can be found in their effects." Here he is in error; two druggists of this city years ago sent Baltimore seed to Ohio, where it was planted, and the product was distilled; the *first* crop had some resemblance to Baltimore oil, but the second far less, and the oil on a fair trial was found to possess much less anthelmintic power and pungency, as well as a different *flavor* from that raised in the vicinity of this city. Those druggists when the oil was *first* received from Ohio concluded it was equal in value to Baltimore, and sold it conscientiously under that impression, but by experience found and regretted their error.* Vermifuge makers as well as physicians have tried the western, and found it to possess so little efficacy that they confine themselves exclusively to Baltimore oil. This peculiarity in soil with many plants is generally admitted. It is known that the best Havana tobacco comes from a certain district in Cuba, and if the seed is planted in our soil it degenerates in a few years to Maryland tobacco; and vice-versa, if Maryland seed be planted in Cuba. The *peculiar* strong flavor of Baltimore oil is never found in the western, neither is its pungency; and I believe had not western oil been introduced and sold by many of our druggists as equal to Baltimore, that the use of oil of wormseed would be prescribed at this day by physicians as an anthelmintic to a far greater extent than it now is. Previous to the introduction of the western it was prescribed here much more extensively than at present. I have thought it but just to send you those facts, &c., lest the publication of Mr. Garrigues' communication in your highly valued and extensively read journal should lead pharmaceutists to coincide with his erroneous views.

A BALTIMORE SUBSCRIBER.

Baltimore, Sept. 29, 1854.

* This information I had from them both personally within two weeks past.

PHARMACEUTICAL NOTES AND GLEANINGS.

HYDROCYANATE OF IRON.—It has been stated in the medical journals, that "hydrocyanate of iron" had been used advantageously in epilepsy. Having been applied to for the salt, and being at a loss to determine what compound was intended, we consulted several athorities without satisfaction.

The dose, one or two grains, would indicate a more active substance than prussian blue. Hydrocyanate of potassa is synonymous with cyanide of potassium. Why not hydrocyanate of iron then be *cyanide of iron?* Gmelin says, (Handbook, vol vii., p. 432,) that "When aqueous cyanide of potassium is mixed with a ferrous salt free from ferric oxide, a light red brown precipitate is obtained, which dissolves in acids. The composition of this precipitate requires further investigation, but it is, perhaps, the true protocyanide of iron C_2 N Fe." In attempting to dry this precipitate it assumes the color of prussian blue, by contact with the air during this process. By washing this precipitate with boiled water, and afterwards displacing most of the water from the particles by alcohol, and then drying, the same result occurred, viz., the whole mass gradually assumed a blue color, but not so deep as prussian blue. Hydrocyanic acid shaken with solution of carbonate of iron in carbonic acid water, forms a greenish oxide of iron, which turns blue by exposure to the air. There is a white cyanide of iron formed when aqueous sulphuretted hydrogen is agitated with finely-powdered prussian blue which converts it into protocyanide of iron; it, however, becomes blue by exposure. There is also a permanent cyanide of iron obtained when the ferrocyanide of ammonia is boiled in close vessels till the hydrocyanate of ammonia all sublimes, but it is insoluble in acids. It is to be regretted that medical writers, in referring to the therapeutic powers of new remedies, do not take more pains to identify the substances they have employed where any doubt may arise. We supplied the compound obtained by double decomposition between cyanide of potassium and protosulphate of of iron, partially washed with alcohol, and dried in a jar over sulphuric acid, but have not yet learned whether it had the desired effect.—ED.

SULPHATE OF QUINIDINIA.—Last year, Dr. William Pepper, Physician to the Pennsylvania Hospital, published an account of

the results of substituting sulphate of cinchona for sulphate of quinia in intermittent fever, and so successful did it prove that he has since continued to use it in his hospital practice. In April last, at the suggestion of Dr. Conrad, Dr. Pepper made a trial of *sulphate of quinidin* (the third alkaloid in cinchona bark,) in several cases of intermittent, with such decided success, that he is disposed to believe that quinidin is more active than either of the other alkaloids. These results corroborate a similar trial in two obstinate cases of intermittent, by Dr. Helfrick of this city, which had a like result. If these observations are supported by other testimony, we shall not hear of the rejection of cinchona barks because in the aggregate of alkaloids there happens to be *less than one per cent. of quinia.*—ED.

MEDICAL STATISTICS.—According to the statistical tables of the census of 1850, there are in the United States and Territories, 40,564 Physicians, 191 Surgeons, 6,139 Apothecaries and Druggists, 465 Chemists, 2,923 Dentists, 10 Oculists, 59 Patent Medicine Makers, and 943 Professors. Of these, 1,060 Physicians, 54 Apothecaries, 8 Oculists, 563 Dentists, and 26 Nostrum Makers, are found in the State of New York alone, viz., one eighth of the physicians and one-sixth of the apothecaries.—*New York Med. Gazette.*

ANTIMONIATE OF QUINIA.—Dr. La Camera, of Naples, has suggested the use of antimoniate of quinia, in intermittents, of great efficacy. The *Bulletin de Therapeutique* corroborates its merits and suggests further trials. This salt is supposed to embrace in its effects the resolvent and diaphoretic properties of the antimonials and the virtues of cinchona. "The dose of antimoniate of quinia is 12 or 15 grains, in broken doses, during the interval of remission."—*Virginia Med. and Surg. Jour.*

LEPTANDRIN—THE RESINOUS PRINCIPLE OF THE ROOT OF LEPTANDRA VIRGINICA.

(From the American Eclectic Dispensatory, page 595.)

Leptandrin may be prepared as follows:—Take of coarsely powdered Leptandra any quantity, alcohol 90 per cent., a sufficient quantity. By percolation obtain a saturated tincture. Place the tincture in a still and distil off the alcohol, and while

hot add the residuum, slowly and gradually, to cold water equal to two or three times its volume. Allow this to stand for seven or eight days, when the resinous matter will precipitate to the bottom of the vessel in a semi-fluid mass, while the water will hold in solution most of the extractive and coloring matter. Remove this water, and to the residue add a fresh supply of cold water, subjecting it to another washing. Then carefully remove the water, after having allowed all the resinous matter to precipitate, which last must be dried in shallow tin or porcelain plates, by a moderately-continued heat, until it becomes perfectly friable on cooling, and which generally requires several days. In the preparation of this article high-proof alcohol must be employed on account of the large amount of extractive matter present, which is soluble in water, and which ascending to the proportion of water employed, prevents the precipitation of the Leptandrin. Care must be taken, likewise, in the application of heat, as too great a heat, say above 175° to 180° F., will render the precipitate inert or materially affect its character. The above is the process usually employed in the preparation of Leptandrin; it may be obtained, however, by adding the tincture to four times its weight of water, distilling off the alcohol, and setting aside the residue for several days until all the Leptandrin precipitates. Remove the water and dry the precipitate as above, having previously worked it in fresh water to remove extractive, etc. Roots of the second year's growth are said to afford the most Leptandrin.

History.—Leptandrin, according to its mode of preparation is a jet black resinous substance resembling asphaltum, or of a greyish brown color, with a peculiar faint cyanic smell and taste, somewhat bitter but not disagreeable. In its agregate it has a vitreous fracture, is unalterable in dry atmosphere, and is without acid or alkaline reactions. Its powder has a black, glistening soot-like appearance, and coalesces in a warm moist air. When first made, it is soluble in alcohol, though, as with many other resins when exposed to atmospheric influence, it becomes imperfectly soluble in alcohol, but perfectly so on the addition of aqua ammonia. It is insoluble in water, but the addition of liquid potassæ or ammonia renders it perfectly soluble, from which solution it is precipitated by acids. Ether takes up a

portion of it, and aqua ammonia added perfectly dissolves it, leaving the ether floating above it of a light reddish-yellow color. It is lighter than chloroform and insoluble in it. Spirits of turpentine takes up a small portion, forming a dirty white liquid; acetic acid likewise dissolves a small portion. None of the above agents have been tried with heat. Nitric acid turns Leptandrin of a brownish-yellow color, muriatic acid a light yellowish-green, and sulphuric acid reddish-brown. Heat semiliquefies it, and it burns with a bright light flame, giving out a sweet balsamic and rather agreeable odor, somewhat resembling balm of Gilead buds when burned as incense. This valuable agent was first prepared and introduced to the profession by W. S. Merrel, of Cincinnati.

Properties.—Leptandrin is a powerful cholagogue, with but slight laxative influence; except given in very large doses, its cathartic powers are but very feeble. It is one of the most efficacious and important agents among those peculiar to eclectic practice, being the only known medicine that efficiently stimulates and corrects the hepatic secretions, and functional derangement of the liver, without debilitating the system by copious alvine evacuations. It may be safely and efficaciously employed in the treatment of diarrhœa, cholera-infantum, some forms of dyspepsia, typhoid fever, and all diseases connected with biliary derangements. Combined with *podophyllin* it is a prompt and effectual remedy in epidemic dysentery, often effecting a permanent cure in from 12 to 18 hours: in dysentery with irritable bowels it may be used alone with advantage, or combined with camphor, as in such cases its union with podophyllin is contra-indicated. In intermittents it renders the action of quinia, when united with it, more certain, and prevents the liability to the return of the disease, at least for the season, and is likewise very beneficial in infantile remittent fever, and in periodical diseases generally, of an obstinate character, in which quinia alone seems to produce little or no result. It may also be used in many other combinations with much advantage, as with hydrastin or with beef's gall, in some dyspeptic affections, jaundice, piles, etc., or with iridin, baptisin, corydalin, caulophyllin, and other active principles, in various forms of the disease. Dose of Leptandrin, from one-half to five or six grains

every three or four hours, according to the action or the effect desired. Some practitioners neglect the use of this agent, because it does not act so powerfully as podophyllin, and hence lose the use of a very important remedy in functional derangement of the liver and other organs essential to digestion.

METALLIC WEALTH OF THE UNITED STATES.

By J. D. Whitney.

In a work on this subject, recently published by Messrs. Lippincott, Grambo & Co., of this city, the author enters into a careful investigation of the mining interests of the United States in comparison with those of other countries. The following extract, summing up the production of metals, is taken from a notice of the work in Silliman's Journal for September, viz:

A general summary at the close of the volume is given, accompanied by a tabular statement of the estimated amount and value of metals produced throughout the world in 1854. The metals selected are gold, silver, mercury, tin copper, zinc, lead and iron. The aggregate of these are as follows:

Gold.	Silver.	Mercury.	Tin.	Copper.	Zinc.	Lead.	Iron.
lbs. troy.	lbs. troy.	lbs. av.	tons.	tons.	tons.	tons.	tons.
481,950	2,965,200	4,200,000	13,660	56,900	60,550	133,000	5,817,000

The product of the United States in gold is set down at 200,000 pounds, Australia and Oceanica at 150,000, and Russia at 60,000 Mexico and South America 47,100. Of silver, the New World supplies 2,473,700 pounds, leaving only the small residue of 491,500 lbs. for all other countries. Of mercury, Spain gives the world 2,500,000 lbs., and the United States 100,000 lbs. England and Australia furnish over half of all the copper produced by the world: the present product of the United States being in this metal only 3,500 tons. Prussia and Belgium furnish four-fifths of all the zinc used in the world (viz. 16,000+33,600 tons.) Lead is distributed between Great Britain, Spain and the United States in the ratio of 4, 2, 1 (viz. 61,000, 30,000 and 15,000 tons each.) England furnishes more than half the iron of the world, 3,000,000 tons, and the United States 1,000,000 tons. France is the next most productive country in iron, 600,000 tons. Russia produces but 200,000 tons, and Sweden 150,000 tons, quantities bearing a very small relation to the celebrity of product of those countries.

The following table exhibits the comparative value of the metallic productions of different countries, from which may be seen the ratio of their production, as compared, first, with that of this country taken as the unit, and, secondly, with that of Great Britain.

	Value of metals produced.	Ratio of production to that of U. States.	Ratio of production to that of Gr't. Britain.
United States,	$79,827,000	1.	5·6
Great Britain,	96,169,800	1·205	·1
Australia,	39,428,000	·494	5·12
Mexico,	30,480,000	·382	1·3
Russian Empire,	25,240,000	·316	1·6
France,	15,252,500	·191	4·15
Chili,	13,144,000	·165	2·15
Rest of South America,	16,176,000	·203	1·6
Austrian Empire,	11,708,000	·147	1.8
Prussia,	9,680,000	·121	1·10
Belgium,	9,375,000	·118	1·10
Spain,	8,016,416	·100	1·12
Sweden and Norway,	5,460,896	·068	1·17
Saxony,	1,455,000	·018	1·67
Hartz,	1,147,588	·014	1·86
Italy,	832,500	·010	1·120
Switzerland,	375.000	·005	1·240

The great importance of our own metallic resources will be at once apparent from an inspection of the above table. It will be seen that we are second only to Great Britain in our production, as we are also in our consumption of the metals. The two great Anglo-Saxon countries stand far before all others; and Australia, a colony of England of but a few years growth, is the next competitor on the list. As our production of gold which now forms so important an item of our metallic wealth, falls off, as it assuredly will, the deficiency may be more than made up by the development of our resources for the production of other metals.

ON THE MEDICINAL PROPERTIES OF THE COTYLEDONS OF SIMABA CEDRON.

By S. S. Purple, M. D.

In the September number of the New York Journal of Medicine, Dr. Purple has published a paper on the medicinal properties of cedron seeds, especially as regards their anti-periodic power as a substitute for quinine in intermittents. We have already noticed the history and botanical origin of these seeds, and the observations of Dr. Purple are too strictly medical and extended to transfer them to our pages; yet whilst referring

the reader to the New York Journal of Medicine for September, page 173, for the details, we copy the following closing remarks of the paper:

"From all that we can learn regarding its habitude and mode of procurement, we are led to believe that the only obstacle in the way of the use of cedron in medicine, is its apparently somewhat limited supply. We say apparent, for in a letter received from Dr. Magrath, we learn that 'the cedron appears to be obtainable in quantity, with some little difficulty, from Carthagena; but a brisk demand, no doubt, would cause an equal supply.' The history of all new medicinal agents, derived from savage or semi-civilized countries, teaches the fact, that at first, the remedy sought after is obtained with much difficulty; but we should not, from this cause alone, neglect to investigate or enquire into its uses; and should it, according to our belief, be found that this article possesses decided merit, and some advantages over quinine, we have no doubt but that some of our enterprising commercial druggists will find it to their interest to devise means for its introduction into our market.

Finally:—From the declared experience of various observers of the medicinal effects of the Simaba cedron, we are warranted in drawing the following conclusions regarding its therapeutic action:—

That it possesses decided anti-periodic properties, and is therefore applicable in the treatment of periodic diseases.

That it is less likely than quinine to produce the aggregate of encephalic or neuropathic phenomena, induced by overdoses.

That it may, in large doses, repeated often, produce griping of the bowels, and even diarrhœa; but that these conditions are easily controlled by appropriate medicaments.

That, as a remedy in intermittent fever, it possesses properties, in many respects, equal to quinine, and in most cases is equally adapted to the curation of this disease.

That, in the treatment of yellow fever, it does not appear to possess any particular advantages over quinine, but nevertheless is equally well adapted to fulfil the indications which call for the use of this latter remedy.

That it possesses marked tonic properties, and deserves a prominent place in this classification of the Materia Medica.

That in chronic dysentery, diarrhœa, dyspepsia, and all stages of the stomach, accompanied with impaired or difficult digestion, its use will be found to be attended with benefit."

That, should a demand arise for its use in medicine, it is believed that it will be found not difficult to obtain a supply, in quantities sufficient to afford it at a much less price than quinine.

NEW YORK, *September* 1*st*, 1854.

ON PANAQUILON, A NEW VEGETABLE SUBSTANCE.

BY S. S. GARRIGUES, of Philadelphia.

Ginseng, the root of a kind of panax, is known in China as a very valuable medicine. In 1703, its existence was proved in the forests of Canada by Sarrasin, where it is known by the name of Oteeraagweh. This American ginseng is the root *Panax quinquefolium*. It has a thickness from a quill to a finger, is only a few inches long, brownish yellow, generally finely ringed, internally yellowish white, spongy. Fresh it smells aromatic; but dry, only faintly so. To the taste it resembles liquorice root, with a disagreeable bitter after taste. It has been chemically examined by Rafinèsque, who stated that he found in it besides ordinary constituents, a camphor-like body, to which he gave the name of panacine. On account of the uncertainty of his statements, I have undertaken a fresh investigation of this root, and been fortunate to discover therein a peculiar matter, on which chiefly depends the taste, and, probably, the medicinal activity of this root. I propose for the name of this substance panaquilon.

A cold infusion of this root, prepared in a percolating apparatus, has a clear brown color and sweetish taste. It reacts acid. By heat a considerable coagulation of albumen is separated from it. If this is then filtered and considerably concentrated acids throw nothing down after cooling, which proves that it contains no glycyrrhizine, which might be expected from the sweet taste of this root at the beginning. To separate the panaquilon, I mixed, at the suggestion of Professor Wöhler, the syrup-like infusion with a saturated solution of sulphate of soda. Hereby a dense adhesive precipitate resulted, which was washed as much as possible with the salt solution, and then treated with absolute alcohol, which dissolved the panaquilon and left the sulphate of soda behind. The panaquilon remaining after the alcohol has been distilled off, is dissolved in water, treated with purified animal charcoal, the solution again evaporated, and the residue once more dissolved in absolute alcohol.

The panaquilon thus prepared is an amorphous yellow powder, which cannot be decolorized by animal charcoal. It is easily soluble in water and alcohol, but insoluble in ether. It has a taste resembling glycyrrhizine, but bitterish. By heat it fuses and is decomposed. It burns without residue. Its solution is not precipitated by acids or chlorides of mercury and platinum, but with tannin it affords a precipitate. By alkalies it is colored brown. Heated with caustic potash panaquilon gives no ammonia.

Three analyses made with this substance, dried at 212° Fahrenheit, gave results which in agreement with the behaviour of panaquilon below related, would lead to the following formula as expressing its composition $C_{24} H_{25} O_{18}$.

The behaviour of panaquilon towards strong acids is very characteristic. It is thereby under the separation of carbonic acid and water, converted into a white body insoluble in water, for which I propose the term panacon. By concentrated sulphuric, panaquilon is dissolved with a fine purple red color. If this solution is poured into water, a white precipitate results of panacon. By an especial research I convinced myself that this change is not accompanied with the formation of sugar. More simply, panacon is obtained when a concentrated solution of panaquilon is mixed with muriatic acid, or, at least, with nitric acid, and gently heated. Under a slight evolution of carbonic acid, panacon separates as a white powder, which fuses by heat under the liquid.

Panacon forms a white powder, appearing under the microscope crystalline. It is tasteless and insoluble in water and ether, but is dissolved by alcohol. With hot concentrated nitric acid it affords oxalic acid. Alkalies are without action upon it. In concentrated sulphuric acid it dissolves with a purple red color, from which it is precipitated white by water. It is very readily fusible, and burns with flame, and leaves no residue.

Two analyses afforded results which may be expressed by the formula $C_{22} H_{19} O_8$. This formula is founded on the assumption that by the formation of panacon from panaquilon, the elements of 2 atoms of carbonic acid and of 6 atoms of water separate from the latter.—*Annals of Pharmacy, from Annalen der Chemie.*

ON THE PTEROCARPUS ERINACEUS, OR KINO TREE OF WEST AFRICA.

BY W. F. DANIELL, M. D., F. R. G. S.
Honorary Member of the Pharmaceutical Society.

In conformity with the routine of garrison duties pertaining to the Gambia command, I became stationed, towards the close of 1852, at Janjamberri, or Macarthy's Island, a small military outpost established about two hundred and fifty miles inland from the embouchure of the river. This small island was advantageously situated between Pisanea and Kayi (the points from which the intrepid Mungo Park commenced his first and second explorations into Central Africa), and afforded a rich field for botanical and ethnological research. In former years the circumjacent localities, now denuded of their more valuable timber, were clothed by dense forests, from which considerable supplies were derived by the European traders at Bathurst, which consisted chiefly in what was termed in commercial parlance, African mahogany (*Ximenia Americana?*). With this mahogany was also felled another kind of wood, deemed of much less value in a mercantile point of view, and therefore seldom exported to England; yet, nevertheless, held in high request by the native communities for the purposes of house and boat-building, and other colonial appliances. By Europeans it was known under the name of *rosewood;* but the Mandingo, Joloff, and other aboriginal tribes, employed their own peculiar designation.

The latter of these trees on several occasions attracted my attention in consequence of its branches being entirely destitute of leaves and flowers, during the greater part of the dry season, while its greyish trunk was frequently tinged with ruby-colored exudations, which occasionally collected in small dark friable masses, on the abraded surfaces of the bark, and within the deeper interstices. A careful examination of the botanical character of this product, led me to infer that it was the *Pterocarpus erinaceus*, Lam., or true kino tree of West Africa, which an analytical investigation of the gum to some extent confirmed, inasmuch as it was apparently endowed with those characteristic properties, by which medical authorities had previously distinguished it.

At present, the information we possess respecting the early

history of this drug is so scanty, that it becomes necessary to enter into a detailed account of what has hitherto been published concerning it. Dr. Fothergill, so far back as 1757, seems to have been the first to describe the qualities of this gum kino, owing to the recommendation of a Dr. Oldfield, who termed it the true gum Senegal. He, however, remarked, that the title was somewhat objectionable, as the small quantity which had then been procured, had principally been derived from the river Gambia, and suggested, that if an application be bestowed on the gum in question, that of *Gummi rubrum astringens Gambiense*, would not be inappropriate. He also further observed, that the drug was purchased on board a Guinea ship at Hull, and amounted only to a few pounds in weight, which the purchaser vended to the most curious of his customers as a "rare sort of the true dragon's blood." This knowledge induced him to refer to the recent works of travellers in Western Africa: and in that of Moore, under a letter of instructions from the Governor of James's Fort to the author, who then resided at Bruko, a trading factory on the banks of the Upper Gambia, he found the following remarks: "There is a red liquor that bleeds plentifully from the bark of a tree called *Pau de Sangue* upon the incision, and in little time hardens to the consistence of gum, which is of great value, and therefore you are desired to use your utmost diligence to procure large quantities of it."* Bruko is a small Foota-foulah town, located about two miles above Macarthy's Island, and the Pterocarpus or rosewood abundantly flourishes in its vicinage, and is the only production that yields any gum or wood of the hue that would merit the designation of *Pau de Sangue*. Moore, in reply, states that he sent a sample from Bruko, which proved to be gum dragon, and, moreover, writes in another letter, that the inhabitants of the district were accustomed to bring him various kinds of gum, amounting to ten or twelve pounds in weight, of this only two pounds were gum dragon, the remainder resembling gum Senegal of an inferior quality. He further observes that "gum dragon comes out of a tree called *Pau de Sangue*, which has a very rough

* Med. Observ. and Inquiries, vol. i., p. 358; vide also Moore, as quoted in the same paper.

bark; upon wounding it, it sweats out in drops like blood, which joining together and being dried by the sun, congeal into lumps. I have had some as large as pullet's eggs." There can be little doubt that the gum dragon here referred to, is the ruby-colored exudation from the Pterocarpus, and consequently the true kino, as the above description will be discovered to be closely applicable both to the cortex and its peculiar sap.

Dr. Winterbottom, for many years physician to the colony of Sierra Leone, upon his arrival in 1796, in England, introduced into his practice a species of bark procured from the Mandingo country, which Afzelius from its aspect surmised might belong to the genus Rondeletia. From subsequent inquiries, however, it was ascertained that his views were correct, inasmuch as the same cortical substance, from specimens since submitted to my examination, that pertained to the kino were evidently those that pertained to the kino tree. A remarkable circumstance tending to confirm this statement is, that the Foulah title of *Bellenda*, by which it was known in Sierra Leone, was precisely the same under which the Foota foulahs of the Gambia recognized it. Dr. Winterbottom likewise furnished a brief outline of its medicinal virtues, and the diseases in which the native practitioners resorted to its exhibition, to be noticed in a future part of this paper.

During his second expedition into Central Africa in 1805, Mungo Park found the *Pterocarpus erinaceus* growing plentifully in the neighborhood of Pisanea, and transmitted the leaves and fruit to England, where they still exist in the botanical collection of the British Museum in a good state of preservation. The discovery, therefore, of the source of the original kino, can only be ascribed to this illustrious traveller.*

* I am indebted to the kindness of a distinguished botanist, Mr. J. J. Bennett, of the British Museum, for the following history of this plant. He remarks, that "the tree producing the true gum kino of commerce was unknown, until a branch in leaf, together with the fruit and gum, were transmitted to Sir Joseph Banks from Kayee, on the river Gambia, in 1805, by Mungo Park, during his last fatal expedition into the interior of Africa (vide Park's *Journal, &c.*, Lond., 4to, 1815, p. lxi. and p. cxxiv). These specimens were immediately determined to belong to a species of *Pterocarpus*, at first presumed to be undescribed, but were subsequently referred by Dr. Brown (Vide Denham's *Narrative*, append., *p.* 235, note)

In their travels through Senegambia to Sierra Leone in 1817-19, Messrs. Gray and Dochard also met with this production, under the country name of *Kari*, the flowers and a leaf of which have been well delineated and described by Sir. W. Hooker, by the appellation *Pterocarpus Africanus*, or gum *Kari*, in the Appendix to their volume. Major Gray observed, that when incisions were made in the trunk and branches of the tree the juice flowed out, "at first of an extremely pale-red color, and in a very liquid state; but it soon coagulates, becoming of a deep blood-red hue, and so remarkably brittle, that its collection is attended with some difficulty."

The *Floræ Senegambiæ* of MM. Guillemin and Perottet, published in 1830-33, contains, however, the most correct outline of the *Pterocarpus erinaceus*. In their work the flowers, leaves, and other portions of the plant are truly figured, and afford an excellent representation of its botanical features. The characteristic description now appended has been taken from these authorities. I may remark, *en passant*, that the specimens of the kino tree brought from the Gambia by myself, when compared with those of Park, and the dilineations of the above authors, leave but a slight doubt as to their identity, and manifestly indicate that all belong to the same production.

PTEROCARPUS, Linn. Lamck., D. C.

Sepala 5 in calycem 5 dentatum concreta. Petala 5 in corol-

to the *Pterocarpus erinacea* of Lamarck, (Encyclopédia Méthodique, Botanique, v., p. 728, and Illustration des Genres, t. 602, f. 4, fruit). In the same note, Mr. Brown also pointed out that *Pterocarpus Africanus or Senegalensis* of Sir W. Hooker in the appendix to Grey and Dochard's *Travels in Western Africa*, *p.* 395, *t.* D., was founded on the same plant and Messrs. Guillemin and Perottet have shown that the *Pterocarpus Adansonii* of Decandolle (*Prodromus* ii., *p.* 419) is in no respect distinct. These gentlemen have also (*Floræ Senegambiæ Tentamen*, i., *p.* 229, *t.* 54) given a detailed description of the tree, together with an excellent figure drawn by M. Decaisne, accompanied by some notes on the mode by which the gum is extracted, and on its pharmaceutical properties. In the Banksian herbarium at the British Museum, besides the specimens of Mungo Park, there are others of the leaves and fruit of the Mandingo '*kano*' collected by Mr. Pitman in 1850, and these are now completed by the addition of excellent specimens of the flowers."

lam papilionaceam disposita. Stamina 10, filimentis varieè inter se connexis. Legumen indehiscens, irregulare, suborbiculatum, alà cinctum, sapè varicosum, 1-2-spermum. Cotyledones crassiusculæ incurvæ. Radicula ad embryonis basim subinflexa.

Arbores aut arbusculæ inermes. Folia imparipinnata. Racemi axillares (*Char. ex D. C. Prodrom.* 2, *p.* 418.)

PTEROCARPUS ERINACEUS.

P. cortice succum proprium nigrescentem exudanti; foliolis 11–15 alternis ovato-oblongis, obtusit subemarginatisve, supernè glabris, subtùs densè et brevê tomentosis; staminibus 8—10 monadelphis aut irregulariter diadelphis; leguminibus orbiculatis membranaceis, in disco echinatulis.

Pterocarpus erinacea. *Poiret in Lamck. Dict.* 5., *p.* 728. *Illust.*, *t.* 602, *f.* 4 (*fructus*).

Pt. erinaceus, D. C., *Prodrom.* 2. *p.* 419.

Pt. Adansonii, D. C., *l. c.*

Pt. Senegalensis, *Vah lex Herb. Jussieu? Hook. in Gray's Travels in W. Africa, p.* 395, *t. D.*

Arbor 40—50 pedes circiter alta, ramosa; trunco nodoso, crasso; ramis divaricatis, teretibus, junioribus velutinis; ligno flavo-rubescenti; cortice griseo rimoso, succum proprium pallidè rubrum dein nigrescentem exsudanti. Folia impari pinnata; foliolis 11—15 alternis, distantibus, petiolulatis, ovato-oblongis, obtusis subemarginatisve, margine undulatus, superné glabris viribus, subtùs brevissimé et densè tomentosis pallidioribus, nervo medio prominulo nervulisque lateralibus parallelis, instructis; junioribus rufo-sericeis, adultis 2—3 poll. longis 1½ poll. latis. Stipulæ lanceolatæ cauli appressæ, villosæ, circitor 3 lin longæ cito deciduæ. Flores in ramis vetustis infrà foliorum gemmas nascentes, paniculati, flavi, bracteolulati, pedunculis teretibus rachi foliorum brevioribus, tomento brevi rufoque onustis, singulo pedicello 3 flores gerenti. Calyx companulatus, hinc gibbosulus, densé velutinus 5-dentatus, subbilabiatus. Corolla papilionacea, flava; vexillo reflexo subrotundo, apice emarginato, margine subundulato, unguiculato, costâ nigrâ longitudinaliter notato; alis subspathulatis læviter arcuatis, longè unguiculatis, hinc auriculâ brevi obtusâ basi instructis, vexillum paulò superantibus; carinâ vexillo alisque breviore, petalis 2 alis consimilibus basi

liberis dorso tantùm connatis compositâ. Stamina 8—10 monadelpha, inturdùm inæqualiter diadelpha, nempé in 2 phalanges divisa, aut 1 filamento feré ad basin segregato, cætaris inæqualiter connatis; antheris ovato-oblongis, dorso affixis. Ovarium lanceolatum, apice sinuosum, villosum biovulatum stylo glabro incurvo et stigmate capitato terminatum, ovulis longitudinaliter affixis. Legumen indehiscens, stipitatum compressimum, membranaceum breveè velutinum, margine undulatum, mucrone brevi (stylo vestigio) lateraliter instructum, in disci centre inflatum, ubique setis rigidis spinescentibus, rufescentibus onustum, biloculare, interdùm abortu uniloculare; loculis monospermis, dissepimento transversali sejunctis. Semen subreniforme, compressum, fuscum, nitidum, cotyledonibus crassiusculis radiculâ brevi accumbenti.

Floret Februario et Martio; fructus maturescunt Maio et Juno. (*Flor. Senegamb., p.* 228-9, *tab.* 54.)

Although this species of Pterocarpus may be found growing more or less commonly in many districts of the Senegal, Nunez, and other streams of West Africa, and is probably indigenous to most of the inland regions through which they wander, yet the Gambia appears to be chiefly the *locale* where it most exuberantly flourishes. On the upper banks of this river, particularly where the kingdoms of Kataba and Nany border its course, and at Kayi, Lamain, Pisanea, and the adjacent countries, this production can be constantly met with, and in fact constitutes one of the ordinary forest trees. Prior to the occupation of Macarthy's Island, the site on which the town was erected was so thickly covered by this wood as to render the clearance difficult. The settlers, however, soon ascertained the value, and by their use of it in different kinds of wooden-work, for beams, firewood, and in the construction of their houses, gradually diminished its propinquity, so that in the course of a few years it became almost extirpated, and has, with a few exceptions, now disappeared from the island.

The tree varies in altitude according to the situation; in some places rarely exceeding forty feet, while in others more favorably adapted for its growth, the elevation it attains is seventy feet and upwards. The branches are spreading and somewhat tortuous, and are clothed with light green leaves, which make their

appearance at the end of April or early in May. They again disappear in October and November, and are not seen during the intervening period, or until the ensuing spring. Numerous papilionaceous flowers of a light yellow tint, emitting a delicate odor, nearly resembling that of the cowslip (*Primula veris*), and diffusing a delightful fragrance throughout the surrounding atmosphere, may be observed in the months of February and March, at the period when the branches are entirely deprived of leaves, and previous to the commencement of their budding. The fruit, a small orbicular pod, is covered with bristles, and ripens in June and July. The trunk is inverted with a greyish-colored bark of various shades, which, as the tree advances towards maturity, becomes deeply corrugated, and broken into irregular longitudinal fissures, transversely intersected at intervals by others of less length but more superficial, so as to leave isolated projections or excrescences. The inner surface is smooth, of a deep red color, with longitudinal fibres, cemented throughout their extent, and partially saturated by the gummiferous principle, which invariably issues forth wheresoever the bark has been wounded or removed from the tree. This portion of the cortical substance, when chewed, leaves a pleasant aromatic and astringent effect on the palate, that remains for a considerable time. It is, therefore, between this and the exterior layer, that the liquid kino is most plentiful.

The gum, when it naturally exudes, is in limited quantities between the crevices of the bark, and cannot be readily detected on account of the external crust being black, and unless the cortex has been purposely abraded or incised with the view of obtaining a larger amount, is likewise somewhat difficult of collection. The exudation, as it first appears, is of a pale and dirty reddish hue, more copious and of greater liquidity, if the younger branches or twigs are cut. This gradually darkens in color in proportion as it becomes exposed to the air, and as the exsiccation is effected, assumes a ruby tint, which time deepens more and more.

In general, the African kino oozes forth in very superficial layers, remarkably friable and brittle, and adheres with such tenacity to the abraded surfaces, that it is almost impossible to procure any quantity without being conjoined with a portion of the wooden fibre. Hence the gum will always be found to have

minute fragments of wood, more or less united with it, and this circumstance has already been noticed by several writers who have given a description of those samples which had formerly been transmitted to England. Owing to its extreme brittleness, whensoever the larger masses are fractured, the fragments are necessarily small and pulverulent, inodorous, of an irregular angular form, those from the interior being shining, and of a deep ruby color, ultimately acquiring a brownish shade by atmospheric exposure. Kino has a peculiar grittiness and flavor when first tasted, combined with a certain degree of aromatic sweetness, not immediately perceptible, and distinct from the rough and astringent action it subsequently exerts on the membranes of the mouth. The most propitious time for procuring this gum is in the months of March and April, from trees of moderate dimensions. These are to be selected principally, since in them the sap is more abundant, and consequently affords a larger supply than others. The means most efficient to facilitate its exudation is by a number of transverse incisions or abrasions in the bark, a few feet from the ground.

The generic title of *Pterocarpus* has been obtained from the Greek words πτερον a wing, and καρπος a fruit, in consequence of the pods being encircled by a broad wing; and that of *erinaceus*, the Latin name for the hedgehog, from the numerous bristles that protect them, and which have been supposed to bear some resemblance to those of this animal. Hence the English denomination of the hedgehog fruited Pterocarpus. The Mandingo designation for the kino tree in the Gambia is *Káno*, that of the Woloffs *Waine*, and the Foulahs *Bellenda*. Various other appellations have been conferred upon it in different countries, the Mandingoes, in the vicinity of Sierra Leone, terming it *Bembee*, the Soosus *Bimbi*, while in several regions of Senegambia it is recognized by that of *Kari*. The origin of the term *kino* is involved in some doubt. The late Dr. Pereira remarks that he has been unable to trace its derivation, but considers that the Hindu name of *Kuenee* or *Kueni* may probably be its source.* Dr. Royle has long been of opinion that it was likewise taken from *Kuenee* or *Kini*, applied to a similar exu-

* Elements of Materia Medica, vol. ii., part 2, p. 1841.

dation from the *Butea Frondosa*.* A more reasonable probability, however, exists that it was derived from the Mandingo *Káno* or *Keno*, under which name it was first sold to the European traders by the natives, and exported by them by this aboriginal expression, and subsequently retained as a means of distinction from other kinds of gum brought from the same localities.†

Although previously employed by Dr. Oldfield, yet the merits of the introduction of African kino as a remedial agent into this country must be conceded to Dr. Fothergill, who exhibited it with advantage in chronic diarrhœas, fluor albus, and such diseases as proceeded from relaxation. Dr. Winterbottom seems only to have known the bark of the tree, from the fact of his obtaining a quantity from the Rio Nunez, where it had been given with great success in an epidemic dysentery prevalent amongst the inmates of the slave factories in that river. After his arrival in London he furnished Dr. Willan with samples, "who made a trial of it in agues, fevers, sore throat, and dysentery, very much to his satisfaction."‡ Under the title of "African Bark" in the same volumes he has compiled an elaborate account of its properties, with a series of experiments instituted on it, which in the form of a decoction was resorted to in cases of African diarrhœa, where opiates and astringents were indicated, and that it proved sufficiently grateful to the stomach to have the desired effect. Independently of the testimony of different physicians, he also adduces several instances of intermittent and other fevers in England, wherein it afforded proof of considerable febrifuge powers from the beneficial effects that followed its administration.§

Park, in his last journal, merely alludes to the ashes of the bark of the kino tree being used as a flux for the smelting of iron, and that he was informed by the natives if he swallowed them he would certainly die.‖ Park, however, might have been

* Manual of Materia Medica, p. 371.
† Vide Park's Letter in Journal, p. lxi.
‡ History of the Native Africans, vol. ii. p. 46.
§ Op. id., vol. ii., App. 2, p. 43.
‖ Vide Journal, p. 49.

misinformed. The Mandingoes usually have recourse to the wood of the *Fillæa Suaveolens*, Gill. et Per., for this purpose, which is thoroughly endowed with poisonous qualities; and it was perhaps to the cortical debris from this tree they alluded, as that of the *Pterocarpus* is considered innocuous.

The authors of the *Flore Senegambie* observe, with reference to this gum:—"Nous ne l'avons pas vu extraire pour les usages Pharmaceutique sur le bords de la Gambie."* Notwithstanding this statement, various medicinal preparations of the gum and bark in combination are exhibited for the cure of certain endemic maladies by the Mandingoes and the Foulahs, in Yany, Bondu, and other inland regions of this division of Western Africa.

During the period I was in medical charge of the troops stationed at Macarthy's Island, I witnessed, on several occasions, the favorable effects of the powdered gum in checking the mucous diarrhœas, and other debilitated conditions of the intestinal canal, to which the inhabitants of these swampy localities are so subject. The bark, independently of its ordinary astringent properties, also exerts a powerful stimulant and tonic influence on the human frame. Observing that it occasionally constituted an ingredient in some of the medical compounds of the natives, I was induced to try it separately in a few cases of local remittent fever, complicated with relaxation of the bowels, as a gargle in salivation, and in other minor affections proceeding from a general atony or depression of the system, and with advantageous results. From these limited data I was led to conclude that this part of the kino tree might not unfrequently be found valuable in the treatment of a greater number of febrile diseases, attended with an adynamic state of the chylo-poietic viscera, common to the negro races, where quinine or other tonic remedies are inadmissible, or not readily attainable, and possibly may be the means of affording relief to those unfortunate travellers who, when destitute of medical resources, are compelled to experience all the baneful and pestilential vicissitudes of an African clime.—*Pharm. Jour. Aug.* 1854.

* Id. op. ubi supra, p. 230.

METHOD OF RAPIDLY BLEACHING WAX, AND PURIFYING TALLOW, OILS, &c.

Wax, properly speaking, consists of pure wax and a coloring matter; there are several kinds of wax, distinguished commercially by the relative amount of coloring matter which they contain. Formerly it was supposed that wax could only be bleached by the action of sunlight; to effect this object, the operations could only be commenced in the month of May, when the fine season has set in, and the sun attained sufficient altitude to send its rays more directly, for a longer period and with more force; and these conditions continue only at most for three or four months. To bleach wax by this process, it must be made into ribbons of great tenuity, or feathered as zinc is by being poured into water; an operation which must be repeated at least three times, whilst the duration of the exposure to the sunlight must occupy from one month to six weeks, in order to destroy the coloring matter to which we have alluded. To do this requires a considerable space, which is often very expensive, and a heavy outlay in plant, such as bleaching frames, canvas, &c.; this primitive condition of the wax industry renders the bleaching not only embarrassing, but uncertain and variable according to the weather.

In order to diminish the amount of capital which was required to be sunk in this branch of trade, and above all to shorten the time required to bleach the wax, M. Cassgrand, some years ago, patented a process in France, which has now passed into the public domain, and which, it appears, has been very successful.

This process consists in melting the wax by means of steam until it becomes very liquid, and then passing it, along with the steam, through a kind of serpentine or worm, by which a large surface becomes exposed to the action of the steam. After traversing the worm, it is received into a double bottom heated by steam, where water is added in order to wash it; from this it is elevated by a pump, kept hot by steam, into another pan similarly heated, and where it is also treated with water, and is again passed through the serpentine. This operation is repeated twice, thrice or four times, according to the quality of the wax; during the passage with the steam through the worm, it becomes denser by, it is said, absorbing water (perhaps mechanically ?),

and deposits in the upper pan. It is allowed to repose in this for about four or five minutes after each passage; and after the last one, about one or two hours, according to quantity, in order to allow of any impurities to subside. The wax is then granulated in the ordinary way by means of cold water, is allowed to dry during two or three days, and the action of light and air does the rest, for which one person is sufficient. The whole of the operations do not require more than a few days, are perfectly certain, and are attended with no danger. Independent of the advantage which such an apparatus has for bleaching wax, it has also that of enabling its qualities, according to relative whiteness, to be distinguished; for this purpose it is necessary to present the wax in mass to the end of the worm, and in a second or two the vapor determines the relative color which it will yield.

This process is also applicable to the purification of tallows and of oils; even fish-oil, when passed through the apparatus of M. Cassgrand, and washed as just described, is completely deprived of its disagreeable smell; and if it be set aside in a place where the temperature only reaches from 59° to 68° F., a fresh deposit will form, and the oil will become perfectly clarified and nearly colorless.

This process has considerable analogy with one which Mr. Dixon, of Dublin, patented some time since for bleaching palm-oil, the principle of which was exposing the oil to the action of steam. Cassgrand's apparatus might, no doubt, be applied to the same purpose, and appears to us to have certain advantages over that of Dixon, especially in exposing a larger surface to the action of the steam, and varying that surface oftener. If not already known here, the process is worthy of the serious attention of soap-boilers. Such a method would evidently be much more effective than the present system of purifying oils, especially where sulphuric acid is used, which is almost universally the case. As that acid is scarcely ever effectively removed, many samples of trotter, rape and other similar oils, are usually quite acid; where the former is used for the manufacture of hair-oil, it is very destructive to the hair, and the latter destroys the lamps when used for burning, &c. The only modification required for the purification of oil would be to divide the oil as much as possible by means of a diaphragm of copper, pierced with holes, in the

first steam vessel, and thus expose the largest possible surface to the action of the steam in flowing through the pierced diaphragm into the worm.—*Chemical Gazette, August*, 1854, *from Dublin Journal of Industrial Progress.*

ON THE DETECTION OF ALCOHOL IN JUDICIAL INVESTIGATIONS.

By Dr. Ed. Strauch.

Thomson has recommended the use of chromic acid for the detection of alcohol. The author confirms the distinctness of the reaction by reduction, formation of aldehyde, &c., but points out the inaccuracies which may arise from the reduction being also caused by many other bodies, although these affect less the distillate.

The essential portion of the author's communication is the following description of a method of determining alcohol by means of platinum, which enables us to decide within a quarter to half an hour whether the distillate of the substance under examination for alcohol contains that body or not.

The part of the body to be examined for alcohol is to be finely divided immediately after it has been taken out of the corpse; or if the test cannot be immediately applied, it must be placed in a well-closed vessel, in order to prevent the volatilization of any alcohol that may be contained in it. If the substance under investigation have an acid reaction, a few drops of very dilute solution of potash are carefully added to it until a piece of litmus-paper dipped into the mixture is no longer reddened. The substance is then put into a tubulated retort, either by means of a funnel or a pair of forceps. This may be of such a size as to hold about 1 lb. of water. For smaller quanties smaller retorts may be made use of, but it is always well to use as much as possible of the substance to be tested. If it be desired to detect alcohol in the lungs, the retort must only be half-filled, as the lungs when heated froth very much, and by this means a portion of the mass in the retort may boil over. The retort is placed in a water-bath, and so arranged that its neck may be but little bent down. This is broken off so far up that a tray of platinum, fine silver or glass, of about $\frac{1}{3}$rd of an inch in breadth and 2

inches long, may be slipped into it. Into this tray some platinum-black is put, and at each end of it is placed a piece of blue litmus-paper moistened with distilled water, which must be partially in contact with the platinum-black. The tray is now pushed, by means of a wire hook, to the place where the neck of the retort passes into its belly, and the water-bath is heated by means of a spirit-lamp. The operation may be facilitated by filling the water-bath with a solution of chloride of calcium or sodium, instead of water. As alcohol boils at a lower temperature than water, it of course is the first to be driven off. As soon, therefore, as the first water-drops begin to condense in the neck of the retort, that portion of the litmus-paper which is in contact with the platinum-black becomes reddened, whilst that portion which is turned towards the belly of the retort still remains blue, and thus at once shows that the acid did not come out of the retort, but was only formed in contact with the platinum-black. When the heat has been applied for some time, and single drops begin to run from the neck of the retort, without any reddening of the litmus-paper, we may conclude with certainty that no trace of alcohol was contained in the substance under examination. But if, on the contrary, the litmus-paper is quickly and strongly reddened, and it is desired to produce further proof of the presence of alcohol, the tray is again to be drawn out of the neck of the retort; the latter is then bent down a little more, a receiver is attached to it, and distillation is continued, until the distillate amounts to several drachms, during which the receiver is cooled by a cloth soaked in cold water. The distillate is then transferred into a small retort, and about the same quantity of fused chloride of calcium; or if this be not at hand, well-dried chloride of sodium is added to it. This retort is then put upon the water bath in pure water, a receiver is attached to it, and distillation continued as long as anything passes over. A few drops of this second distillate may now be added to a mixture of bichromate of potash and sulphuric acid, to obtain the alcoholic reaction. The remainder of the distillate may be made use of to ascertain the specific gravity; but this, when operating upon such small quantities, not only requires fine apparatus, but also much skill, and must consequently often remain undone. A portion of the fluid may afterwards be poured into a metallic or por-

celain capsule, when its ignition by means of a burning match may be attempted. If this does not succeed, the capsule may be heated by a spirit-lamp, when the alcohol contained in the water is the first to evaporate, and may be ignited by a burning match. A portion of the distillate may be set aside; and if a considerable quantity still remains, the following experiment may be made with it. The neck of a small glass funnel is loosely closed by means of a small glass rod; some platinum-black is then put into the funnel, moistened with a few drops of distilled water, and the alcoholic fluid is then allowed to flow upon it in a very slow stream by means of a cotton thread, which may act as a siphon. A fluid, with an acid reaction, then drops from the funnel; this is carefully neutralized by a few drops of very dilute solution of potash, and evaporated to perfect dryness on the water-bath. A portion of the residue may be added to some very dilute chloride of iron, to obtain the ordinary reaction of the acetates; another portion may be triturated with a small quantity of arsenious acid, and heated in a small test-tube, when the characteristic strong odor of oxide of kakodyle is produced. These two latter tests, however, require rather larger quantities of acetic acid before they will succeed; as a general rule, the test with the platinum-black, to which the reaction with chromic acid and the test of combustibility may be added, is quite sufficient.

The platinum-black employed for this purpose is precipitated from a very dilute solution of chloride of platinum by means of zinc; it is washed first with muriatic acid, then with nitric acid, and lastly with potash. The author concludes with a series of experiments, which sufficiently prove the applicability of the method.—*Chemical Gazette, August*, 1854, *from* Strauch's *Inaugural Dissertation*, Dorpat, 1852.

ON THE RECOGNITION OF BLOOD-SPOTS UPON LINEN AND COTTON STUFFS.

By C. Wiehr.

In the course of last year the author had to examine some pieces of stuffs which bore red spots; these were a dirty old piece of coarse unbleached linen and a blue and white checked pillow-cover. The object was to ascertain whether the red spots upon them were produced by blood.

With this object, a red fragment was cut out of each piece of

stuff, and each fragment extracted separately with distilled water. The spots on the coarse cloth had already begun to decompose, as it had lain a long time buried in dung. The filtered fluid from it had a dingy brownish-red color. By the employment of the reagents, such as liquid chlorine, ammonia, nitric acid and tincture of galls, which are particularly adapted for the detection of albumen, the proper reactions were certainly obtained; but as the fluid was not of a pure red color, they were not so distinct as to enable the presence of blood to be determined with perfect certainty. With the second fluid from the pillow-cover, which had a dark violet color, from the bad blue which was produced by log-wood, these reagents could not be employed. The author endeavored to produce cyanide of potassium with the supposed blood-spots of these stuffs. For this purpose, having first ascertained, in a well-known manner, that they contained no wool, he roasted a red fragment of the coarse linen in a porcelain crucible until it could be rubbed to powder; this powder was mixed with some carbonate of potash, and strongly heated to redness. The calcined mixture was extracted with distilled water, and a little solution of a salt of protoxide, and another of peroxide of iron, mixed with the filtered fluid, by which means a precipitate of indeterminate color, consisting of protoxide and peroxide of iron, precipitated by the excess of carbonate of potash and protopercyanide of iron, was produced. A little dilute sulphuric acid was now added, by which the oxides of iron were dissolved; whilst, on the other hand, the protopercyanide of iron, which is insoluble in sulphuric acid, made its appearance with its blue color. The same result was obtained with a piece of the checked stuff on which red spots existed, but not with fragments of the stuffs which presented no appearance of blood-spots.

The experiments were also frequently repeated with other blood, and furnished satisfactory results even with the smallest quantities.

The operation also succeeds when a piece of stuff spotted with blood is boiled with solution of caustic potash, the fluid evaporated to dryness and calcined, and then treated with iron salts and sulphuric acid. This method may also be employed when blood-spots are found upon metallic objects; the spots are dissolved from the metal by solution of potash.—*Chemical Gazette, August,* 1854,. *from Archiv. der Pharm.*, lxxviii. p. 21.

STUDY.

By Mr. Joseph Ince.

Half the intellect of London has arrived there with a few shillings and a carpet-bag. Its great writers, statesmen, merchants, adventurers of every kind, down to its great Chemists, have travelled on the same stage-coach. Family distress, narrowed opportunities, and sometimes actual want, have been the best heritage of many of our illustrious men. It is for us with a laudable ambition to follow their example, and to act in our turn as they have done before; in furtherance of which object a theory is offered, and its practical results worked out, addressed exclusively to those assistants who have little time, no competent advisers, and no friends. Such an one on first being introduced to the subject, would infallibly remark, "These excellent discourses read very nice on paper, difficulties surmounted make great men, but I am nothing but a Druggist's assistant; I have early and late hours, while my time is not my own. The tide of fortune might roll my way in vain, for I have business to attend to, pills to roll out, and physic to make up. Besides, I have a strong notion that retail Pharmacy contracts the mind; drugs and success in life form no amalgam. If some good friend would kindly leave me a legacy, or people have no medicine after eight o'clock, I might perhaps then read a little, do something, and improve." Of course after this statement you naturally feel better, so now will you just let me give you my quiet mind. What makes success? and who are the men who gain it? Every one knows who fail. Give a man plenty of time and sufficient money, and he will in general make no use of the first, and waste the second. Great natural opportunities, an easy access to society, friends, a crowd of teachers, a ready-made position involving no struggle, and no anxiety, shut out for ever the most distant hope of extrication from such a Capuan luxury. It is a fatality to be born with white kid gloves. To all this there are bright exceptions, but so few that they only prove the rule, nor do these remarks apply to hereditary rank, where habitual cultivation and contact with elevating circumstances produce noble specimens to the contrary. The past is the great teacher for the present, nor is there a more consoling thought, than

that what man has done, man may do. Physic has not the contracting influence you imagine. An assistant like yourself, while in a suburban district, managed to become as brilliant in literature as he now is high in law, and it needs some self-denial, on the part of the writer, to refrain from citing endless instances.

So much for intellect. Infinitely more to the purpose it is to know, that those who never left their original calling, succeeded in it with no greater advantages than you possess. The names best known are the most appropriate illustrations, though personal mention would be both invidious and indelicate. All first-class Chemists' establishments are now so interwoven and associated with daily city life, that each separate firm, with its owner and reputation, seems part of the current course of events. But there was a time when these very houses were not in existence. Their directors were hard-working, persevering, determined assistants, with not a tithe of the advantages of the present day. Education had to be dug up. The scanty Latin of their youth was mystified in an unintelligible grammar, which has only been swept away within the last few years. Greek was considered a language well adapted to the Athenians, and an austere schoolmaster who taught for his salary, was not likely to awaken a strong interest in general knowledge. After this pleasant commencement, the young beginner was apprenticed to a Chemist, because his parents thought it *such a nice clean business;* accordingly, the Tyro found himself immediately smothered up to his eyes in white, red, and blue paint, not unlike the clown at Astley's, happy to present himself to society, not too redolent of varnish, and, having escaped the oil-can on the one side, and the black-lead on the other, allow a comprehensive apron to cover all deficiencies for seven long years. He then came to London. No institution taught him anything, no good and cheap books instructed him. There were museums for surgery, anatomy, and geology, but none for him; there was less time than there now is, and rougher work. What then? The battle of life was before him, and he won it. Success, almost barricaded, was carried by assault. Fame was not an heirloom in the family, it was gained slowly but surely. The shop, though draughty enough in all conscience, was never favored by some special gale from heaven which swept in the

customers, advertised the drugs, and improvised a reputation, yet somehow or other the new house and its owner by degrees gained itself a name, passed into a household word, and became as well known as St. Paul's Cathedral.

Study was the talisman which wrought the enchantment. One hour a day devoted for three years to regular, uninterrupted, systematic reading would enable you to reach the limits of your ambition. Three years! what an age! But unimproved or not they *will* go all the same, so why not make the best of them in passing? The sole question is, can you get one hour? Such is the internal constitution of some houses that it is quite impossible. On this subject we are fearful of being led astray by temporary excitement, which would gain no object, but simply create annoyance. We believe it to be the interest of none but the gas companies to commence business before the day-dawn, and protract it beyond the dead of night. It is the interest of masters to have the cordial sympathy of their assistants, and not their unwilling services. It is the interest of the public to be served by an intelligent being, and not by a spectral incompetent. It is the interest of the assistants to have the requisite time for improvement here, and the opportunity for attending those sacred duties which are to fit them for hereafter.

Now for a few practical details:—Ten pages can be well read in one hour. "Why bless us all, I can read fifty without the slightest trouble—thirty at least." In "bless-us-all gentlemen" we have little confidence; the first month finds them at work like a steam-engine, the second at the bottom of their beds They are like those remarkable young ladies who *learn* French in three months, pick up Italian on their way, and take German at a hand-gallop—a process which causes a slight embarrassment to the respective natives.

Returning to the decimal system, which is after all the best, a short tabular view may tend to enlighten the subject. One month contains in round numbers thirty days, consequently ten pages every morning would be 300 pages a month, from which the following *average* result might ensue:—

Pereira's Materia Medica .	1900 pages	6 months.
London Pharmacopœia .	550 "	2 "
Christison's Dispensatory .	950 "	3 "

Thomson's Dispensatory .	1150	"	4 months.
Brande's Chemistry . .	1500	"	5 "
Turner and Liebig . . .	1240	"	4 "
			2 years.

The whole of these are books of general reference.

Supposing that one hour would only master six pages a day of Chemical works requiring more than ordinary attention, then 180 pages would be read each month, and 2160 pages in a year, which would include the following:—

Fownes' Chemistry . .	550 pages.
Gregory's Outlines . .	560 "
Royle's Materia Medica .	700 "
Fresenius' Analysis . .	350 "
	2160

Nothing now remains to make this table accurate but to correct for pressure of time and density of head.

It will not be supposed for a moment that the mere reading of these books will constitute a well-grounded acquaintance with their contents, but the list shows that there is a possibility of accomplishing far more than is generally supposed in a very limited space of time. Few, indeed, would have courage to drag through some of the ponderous volumes enumerated, nor would such a herculean task be advisable. Such calculations are necessarily imperfect, though useful, as there may be interfering circumstances, over which there is no control. Sickness will sometimes throw its shadow over the brightest hopes. It may be a fancy, but we have always felt the toilsome nature of unassociated Chemistry, and therefore suggest the following plan:—

Allow one hour, every other day, to the consecutive continuous reading of *one* outline work, by which means you would triumph over 150 pages a month, and 1800 pages in the year.

It is usually desirable not to pore over the same manual too often, after having once carefully perused it, but to commence another, which, though treating on the same subject, is expressed in different words. There are few introductory treatises of more than 600 pages each.

At the same time it is well to know that an occasional dip into one book, varied by a short reading of another, a snatch of Brande, a glance at Daniell, a look into Fownes, and a general survey of Gmelin, Parkes, or Faraday, will consume the same amount of time, and lead to nothing.

No one can hide from himself the absolute necessity at the present day of being acquainted with at least the elements of French and German. The two languages have become of trade importance, to say nothing of any intellectual enjoyment they may afford. The time will be well spent that is devoted for three alternate mornings to the hard study of the first. Now our imaginary Assistant looks unwell, and delivers himself as follows:—"Yes, very good, if I had learnt at school, but they taught nothing there but Latin, of which I only recollect the first page of Cæsar's Commentaries. It would cost two or three guineas a quarter for a master, and I should be ruined in grammars, dictionaries, and books of reference; besides which you can never persuade me that I can learn French in one hour a day." No, very likely not, but you will soon convince yourself of that important fact. Perhaps you have seen the title of a pamphlet, "Plenty of Work and how to do it." The *modus operandi* is as follows;—Buy a Cobbett's Grammar. Read it through and through until its chapters are burnt into your mind, and when the excitement of a new impulse ceases, wade through its dreariest details with still untiring energy. London is a wide place, containing all sorts of people, nor is there any difficulty in meeting with Frenchmen as acquaintances. More could be learnt from them in casual intercourse than by any other means. From hence you cannot move a step without a teacher; no very alarming undertaking, as the slightest arrangement with two or three others similarly disposed would secure his services at a trifling cost, while to those living in the city, opportunities obtrude themselves unsought. Having gone thus far, Devotion would suffer little were you occasionally to attend the services of a foreign church.

The first year closes, during which a good insight into Elementary Chemistry has been gained, as well as a tolerable advance into the rudiments of French. Union is strength, and on this principle some book should occupy the second year

which contains the best combination of Chemistry, Pharmacy, and Materia Medica; of which perhaps there is no better specimen than Pereira's *Elements*. If it be possible, borrow it; if not, club together and buy it, for it must be had. The three alternate days still remain for disposal. For the second year it would be an useful variety to allot one hour a week to German, the other two being claimed by French as usual. One of the best Grammars is by Dr. Tiarks, price six shillings; but Dictionaries, Manuals, and all sorts of foreign books may be picked up for a very little at a bookstall. Personal reserve is the only hindrance to companionship with some of the numerous resident Germans. Need it be mentioned that the best aid to study is at your own disposal. Buy any foreign work and its English version, then constantly translate and retranslate alternately from one to the other, correcting your attempts afterwards by the book in hand —for instance, *Les Confidences*, by Lamartine, or *Undine*, by De La Motte Fouqué. Children's books are not to be despised; they are at first of greater service than Racine or Schiller.

The prospect brightens as the drudgery of elementary study is gradually left behind, and on the third year it would be no presumption to enter at once on those works in which the first principles of Pharmacy are carried out to their legitimate application, such as Watson's *Principles and Practice of Physic*, or Bowman's *Practical and Medical Chemistry*. Perhaps now is the best opportunity of understanding and tracing out the different preparations included in the various Pharmacopœias, for which the summary presented by Mr. Squire will be no small assistance. The two languages may also be studied together, but by this time they will have become an integral part of reading, not a separate branch. To gain this point will amply compensate for the hardships of the struggle, nor can we express a kinder wish for the student than the inheritance of such joy, recollecting that a contented mind is a continual feast. All this may be realized by one hour's application. Botany has been intentionally omitted, as it requires for its right study ample leisure and out-door speculations. To those gentlemen, who have time at their own disposal, who have free access to museums, libraries, and lectures, and are surrounded by all the appliances of learning, these remarks may seem absurd; but

they are intended alone for those who have very scanty time and most limited opportunities. Weary, indeed, beyond description, is the manual occupation of ignorance. Can there be a harder fate than with an empty mind to associate with a row of monotonous bottles, a gas-jet, and unmeaning implements of coction? If you but knew the heaven you could create within you by this practice of habitual study! Knowledge turns the meanest circumstances into sources of enjoyment. Under such influence the solitary chamber brightens up, the charm of the Casino fades, and an inward satisfaction finds its expression in acts of good-will and courtesy in daily life.—*Pharm. Journ. June* 1854.

31, Southampton Street, Covent Garden, London.

THE LEAVES OF THE MAGNOLIA TRIPETALA AS A DRESSING FOR BLISTERS.

By John Stainback Wilson, M. D., of Airmount, Alabama.

As this Journal is eminently practical, it is hoped that a brief notice of the remarkable species of Magnolia which heads this article, will not be unacceptable.

The M. tripetala is known by the common names of "umbrella tree" and "wild cucumber," the latter being, we think, the most common in Alabama, where it grows abundantly; although it seems that this name is most generally applied to the M. acuminata.

The species of Magnolia under consideration, is one of the most remarkable productions of the United States, and will not fail to attract the attention of the most unobservant, by the wonderful size of its leaves and the beauty of its flowers: "the former are eighteen or twenty inches long, by seven or eight in breadth," and even larger than this: while the latter are of corresponding magnitude, being "seven or eight inches in diameter." We are informed that "this species of the Magnolia extends from the northern parts of New York to the southern limits of the United States," but we have never seen it in any part of the State of Georgia. Still, as it is no doubt a common production of the rich lime lands of the South Western and Western States, its "medical properties and uses" should be known to the physicians of that region; and it should not suffer unmerited neglect

like too many of our useful indigenous remedies. The M. tripetala (the bark) is highly esteemed by the common people as a tonic, and some of them even consider it an infallible specific in dropsies; this, of course, cannot be conceded, but the estimation in which it is held is, at least, an evidence that it is not by any means destitute of medicinal virtues. And in addition to this, we have the higher evidence of our Dispensatory that it has been found useful in chronic rheumatism, and intermittent and remittent fevers. We have had no experience with it in the treatment of the above diseases; but we have used the leaves as a dressing for blistered surfaces with satisfactory results, and the main object of this article is to commend this application to the attention of the profession.

We will simply, in conclusion, mention why we think this dressing should be considered worthy of notice: 1st. The leaves of the Magnolia are not officinal, and it may therefore, be presumed, that their uses are unknown. 2d. We think that they are equally as good as the collard or cabbage leaves, so much used; while they are often more readily obtainable, much larger, and less offensive in smell.

Before using, we scald them, but think it possible that they would answer every purpose, if applied in the natural state. *Southern Med. and Surg. Journal*, July, 1854.

PURIFICATION OF SPIRITS BY FILTRATION.

By Mr. W. Schaeffer.

Instead of resorting to repeated distillations for effecting the purification of spirits, Mr. Schaeffer proposes the use of a filter. In a suitable vessel, the form of which is not material, a filtering bed is constructed in the following manner:—On a false perforated bottom, covered with woollen or other fabric, a layer of about six inches of well-washed and very clean river sand is placed; next about twelve inches of granular charcoal, preferring that made from birch; on the charcoal is placed a layer of about one inch of wheat, boiled to such an extent as to cause it to swell as large as possible, and so that it will readily crush between the fingers. Above this is laid about ten inches of charcoal, then about one inch of broken oyster shells, and then about two inches

more of charcoal, over which is placed a layer of woollen or other fabric, and over it a perforated partition, on to which the spirit to be filtered is poured; the filter is kept covered, and in order that the spirit may flow freely into the compartment of the filter below the filtering materials, a tube connects such lower compartment with the upper compartment of the filter, so that the air may pass freely between the lower and upper compartments of the filter. On each of the several strata above described, it is desirable to place a layer of filtering paper.

The charcoal suitable for the above purpose is not such as is obtained in the ordinary mode of preparation. It is placed in a retort or oven, and heated to a red-heat until the blue flame has passed off, and the flame become red. The charcoal is then cooled in water, in which carbonate of potash has previously been dissolved, in the proportion of two ounces of carbonate to fifty gallons of water. The charcoal being deprived of the water is then reduced to a granular state, in which condition it is ready for use.—*Annals of Pharmacy*, August, 1854.

NEW VARIETY OF BALSAM OF COPAIBA.

By Mr. Charles Lowe,
Assistant in the Royal Institution Laboratory, Manchester.

An organic fluid was lately placed in my hands by Mr. Grace Calvert for examination, which he had received from an oil merchant of this city, who stated that all he knew of the substance was, that it was obtained by the incision of a certain tree growing on the coast of *India*. From the characters it presents I have ascertained it to be a balsam of copaiba, but as it differs in some of its properties from other balsams that I have examined, I forward you the following notice, in hopes that it may prove interesting to some of your numerous readers.

In appearance this balsam of copaiba is dark colored and turbid. Its turbidity is due to a greenish resinous matter, held in suspension, which is, however, easily separable, either by filtration or deposition, leaving a brown transparent liquid of sp. gr. 0.970. When the latter fluid is submitted to a careful distillation it yields:—

Essential oil . .	65 per cent.
Resin . . .	34 "
Acetic acid and water	1 "
	100

I find that the essential oil in its various reactions with potassium, iodine, nitric acid, &c., and moreover in taste, exactly corresponds with those presented by pure essence of copaiba. The resin left by distillation of the balsam, either with or without water, is, if deprived of the whole of the essential oil, extremely hard. Its entire solubility in coal naphtha proves the absence of any of the soft resin which exists in most of the copaiba of commerce. This hard resin (copaivic acid) being most probably the active principle of balsam of copaiva, I am induced to think its quantity and purity in the one I have examined is indicative of its superior value as a medicament. The dark color of the balsam may perhaps limit its employment, but the large quantity of copaivic acid it contains renders it valuable, as the latter may be made available by heating the filtered balsam to the boiling point with a small quantity of caustic potash or soda lye, of sp. gr. 1.34, and separating the resinate of potash or soda from the essential oil. The alkaline resinate may then be dissolved in water, giving a colorless solution (similar to Frank's specific), or the balsam may be treated with magnesia to form the ordinary copaiba pill.

I have in conclusion remarked:—

1st, That the essential oil obtained by the distillation of balsam copaiba has, like several other hydrocarbons, the property of dissolving indigo.

2dly, The new variety of balsam above described presents the curious property of becoming gelatinous (so much so that the tube may safely be inverted), if heated to 230° Fah., even if a *sealed* tube be employed. This character being dissimilar to the one given in the same circumstances with such other balsams as I had at my disposal, I am induced to attribute it to the large amount of "*hard resin*" it contains.

3dly, Balsams of copaiba in general give, on distillation with two per cent. sulphuric acid, a beautiful blue volatile oil. Chlorine, hypochlorite of lime, and bichromate of potash, give a si-

milar character with the balsam, which appears to me to be due to the oxidation of the hard resin, as I have been unable to obtain but a small proportion of the blue-colored oil when I employed a balsam containing "*soft* resin" comparatively to when I made use of the one above described, which, as I have already remarked, contains only "hard resin." A further support of this view is, that pure essence of copaiba assumes no blue coloration when distilled as above.

4thly, That cold sulphuric acid produces a purple coloration with balsam of copaiba, similar to that obtained by its action on cod-liver oil. Such being the case, it is probable that a small quantity of it, mixed with olive or some other oil, may be sold by unprincipled persons as genuine cod-liver oil.—*Pharm. Jour. Aug.* 1, 1854.

TRADE IN CINCHONA BARK IN BOLIVIA.

By Dr. H. A. Weddell.

A source of wealth in the department of La Paz, quite as abundant as the mines, is the trade in Cinchona bark. The immense importance that the traffic in this production has acquired in Bolivia, is a sufficient reason why I should briefly claim the attention of my readers to the subject, especially as during my last residence at La Paz, Cinchona bark was the chief subject of all conversation, in consequence of the differences arising between the bark-cutters or *cascarilleros*, and the company which had obtained from the government the privilege of exporting this precious bark. It is on this point principally that I will make some remarks.

As has been stated by M. de Humboldt, it was not until about the year 1776 that the Cinchona barks of Lower Peru were offered in the markets of Europe. Up to that period these markets were supplied almost exclusively at the expense of the forests of Loxa: the barks from New Granada appeared about the same time; but it was not until much later that the Cinchona barks of Bolivia, or Higher Peru, entered into the competition—a competition which became formidable since by the discovery in 1820 of quinine, the febrifuge principle *par excellence* of the drug, it became manifest that the *Calisaya bark* far surpassed in richness all other species known. The forests of certain parts of Bolivia are in fact the

only spots where nature has produced in some abundance the tree which affords this superior bark; and in this respect the department of La Paz is particularly favored.

Shortly after the period I have mentioned, the influx of *cascarilleros* into the forests became so considerable, that in a short time there hardly remained a Cinchona tree in the neighborhood of the inhabited districts, and the exports increased so much that the drug fell to a low price. The government of the day took, however, no steps to remedy such a state of things, and they consequently remained in the same position until about the year 1830. At that period the administration of General Santa Cruz, judging that it had become absolutely necessary to take some measures to prevent the exhaustion of so precious a source of wealth, formed the idea of prohibiting a free traffic in the bark, and of limiting to a certain amount the quantity which should thenceforth be collected in the forests and exported from the republic; but the means employed not having produced the expected result, it was decided that the exclusive right of exportation should be ceded to a national company. In November, 1834, the congress decreed a law on the subject, but it still proved ineffectual.

The free collection of the bark having then re-taken its destructive course, a new decree was requisite to suspend it. The cutting of Cinchona was consequently prohibited for five years, but long before the expiration of this term, the decree was repealed, and in its stead an export duty of from 12 to 20 *piastres* per quintal was levied.

In 1841, General Ballivian attained to power, but he introduced into the trade in barks no important change, until, in the year 1844, the legislative congress authorised the government itself to negotiate the capital necessary for the creation of a national bank which should purchase and export all the Cinchona bark produced in the country, paying for it at a rate to be fixed by itself (the bank), and which should bear a relation, said the law, to the funds which it (the bank) might have at its disposal, and to the interests of the *cascarilleros*.

The capital, however, for this operation not having been forthcoming, the administration of Ballivian offered shortly afterwards to the highest bidder the exclusive privilege of exporting the Cin-

chona bark of the republic, limiting the contract to a duration of two years. No one, however, offered to accept it.

The year following (1845) the basis of the agreement offered by the government was modified, and the *monopoly* finally adjudicated to Messrs. Jorge Tesanos Pinto and Co., for the annual sum of 119,000 piastres, and for a period of five years, during which the annual export might not exceed four thousand quintals, or during the whole time, 20,000 quintals, or 2,000,000 pounds.

It appears that the congress of 1846, to which Ballivian submitted the plan adopted by his government, gave it its approbation, but the low price at which the company purchased the barks of those who, with immense toil had collected them in the depths of the forests, rendered it very unpopular, and it ceased not, from the time of its foundation, to excite public complaint, until at last a decree of General Belzu, dated 17th March, 1849, put an end to its existence. Happily for the company, its coffers had already been long since filled.

Unrestricted trade with a duty of twenty piastres per quintal was immediately re-established, until a new company could be formed upon the conditions laid down in the laws of 1834 and 1844, which indeed had been attempted, but with no greater success than on the first occasion. Recourse was then again had to the public, and the offers of Messrs. Aramayo, Brothers and Co., towards the end of the year 1849, were accepted.

The new society, whose operations commenced on the 1st of April, 1850, was to pay to the government the yearly sum of 142,000 piastres for the right of exporting annually 7000 quintals of barks, binding itself to purchase the said barks of any one offering them; the large bark or *Calisaya tabla* at the rate of 60 piastres per quintal, and the thin or rolled barks, known as *Charque* and *Canuto*, at the rate of 36 or 30 piastres per quintal of 100 Spanish pounds.

But the Pinto Company paid for the *Tabla* but from eighteen to twenty-two piastres, and for the *Canuto* from eight to ten piastres per quintal. One may judge then under what favorable auspices the new monopolists commenced operations; but the harmony was not to last long. The advantageous conditions which were offered to the *cascarilleros*, so different from those to which they had been accustomed, induced so great a number to engage

in collecting the bark, that before the termination of the first year there had arrived at La Paz more than 20,000 qnintals; that is, twice as much as the Company had engaged and was prepared to purchase in the period, and as much as the Pinto Company would have exported in five years. Affairs then took another aspect. Upon the occurrence of this fresh crisis, which ought long previously to have been foreseen, the government at once concluded that it was its duty to sustain the monopoly, and consequently lent its support to the various measures suggested to it for this end. It enacted, in particular, that all barks obtained from the forests should be immediately deposited in the Company's warehouses, under guarantee of being purchased by it as soon as it required them. It then prohibited bark-cutting in all forests of the republic for four years.

The first of these decrees was intended to put a stop to contraband trade, which, though far less easy than one might have supposed, was, nevertheless, practicable. It exasperated particularly the inhabitants of La Paz.

The second decree, which attacked more especially the interests of the inhabitants of the towns of the interior, who still had a considerable number of workmen in the forests, was received by them with the same disfavor; and the complaints becoming general, the feeble President was driven to make, to the prejudice of the monopoly, several concessions which preluded its fall. In fact, the extraordinary congress, which assembled at La Paz during our abode there, having decided that the executive power had exceeded its functions in making with the firm of Aramayo the agreement in question, annulled the contract.

At this period the *Banco Aramayo* had purchased 14,000 quintals of barks, and had proposed to take 14,000 quintals in addition (making the lots of the *two* following years), one-third of the amount of which was to be paid in ready money, and the remainder by bills; but all the merchants were not willing to agree to this arrangement, and a new company, which offered to pay for the goods with ready money, having offered itself and having been accepted, the sales effected on credit by the old firm were immediately annulled. On my departure from La Paz the new Company had just been constituted under the title of Pedro Blaye and Co., and as it had engaged to purchase, on almost the same conditions

as the Aramayo Company, all the *Calisaya* barks then on sale, whether at La Paz or at Cochabamba, as well as those which might be collected in the forests before the termination of the year 1851, it was feared that the markets might become overstocked, and that the price of the precious drug might fall to such an extent that neither one nor other of the *bancos* would come out of the affair with profit.*

In the two years which had then expired, the forests alone of Bolivia produced more than three millions of pounds of Cinchona bark! Such was the result of the sudden rise which took place in the price of barks, in consequence of the fall of the Pinto monopoly.

It was not, however, the poor *cascarilleros*, miserable laborers who, at the expense of vast toil, had dragged from the midst of the forests the much sought-for bark; it was not they, I say, who generally profited by the change, but far rather was it their wealthy employers. It is this that makes one the more regret the ravages committed in the forests of this region, and of which I will mention one instance.

I have said that the bark called *Quinquina tabla*, that is the larger bark of the trunk of the tree, was paid for at the rate of sixty piastres, and that the *Charque* or *Charquesillo*,† and the *canuto* or thinner barks obtained from the lower parts of the tree, realized scarcely the half of this sum. What was the result of this difference in price? It was, that in many places *all* the smaller bark, which was difficult to peel, had been abandoned, and nothing taken from the felled tree but the *large* bark. In the newly discovered Cinchona forests of Cochabamba I have been assured that in order not to have the trouble of felling a tree, they frequently were content to strip off the bark merely to the height that the hand could easily reach; and that if a tree was cut down, the *cas-*

* The firm of Blaye and Co. has fallen in its turn, and I have learnt that the government has decided to conduct itself the export of the barks which remained in the warehouses, paying for them at the same rates that would have been given by the companies.

† *Charque* is the name applied in Spanish America to *dried meat*, which has generally the form of thin slices. It is to this that they compare the thin Cinchona barks which have dried without rolling up. The word *charquesillo* is a diminutive of *charque*.

carilleros would neglect to remove all the bark which lay next the earth, in order to avoid the trouble of turning the trunk.

Whatever may be said, the forests of Bolivia, rich as they are, cannot long resist continued attacks of the kind to which they have been recently subjected. Those who in Europe think they see enormous and ever-growing masses of *Cinchona*, may well imagine a perpetual abundance. But he who seeks in the localities where the *Cinchona* is produced, to ascertain how much of it exists, is compelled to form another opinion. The single fact will effectually show the constantly progressive diminution of the Cinchona,* namely, that formerly it was everywhere to be met with in the neighborhoods of the inhabited places of the region, whereas now, to find a tree of some *decimetres* diameter, one must generally make a journey of several days into the recesses of the forests. But unless these forests be interminable, which they are not, or the trees that are felled be replaced by others, which unfortunately is very rarely the case, how can a traffic, conducted like that of which I have spoken, be carried on for an indefinite period? By all evidence it is plain that the Calisaya bark, if continued to be collected in this manner, will, sooner or later, more or less completely disappear from our markets (unless, however, the government attends to its reproduction), and the commoner species of *Cinchona* which will replace it, will, in their turn, doubtless share the same fate.

Before the misfortune which I foresee, arrive (and it will not be in our day), science will perhaps have made the conquest of some new remedy which will render the loss of Peruvian bark less to be regretted.

Cinchona bark is packed for exportation in fresh ox-hides, after having been previously sewed up in bags of coarse cloth, which, at La Paz, contain six *arrobas*, five pounds. The bale or seron complete, weighing about six *arrobas*, fifteen pounds, forms half a mule load. The entire load, therefore, a little exceeds thirteen *arrobas*, the transport of which to the coast costs, on an average, ten piastres.—*Pharmaceutical Journal*, Sept., 1854, from *Voyage dans le Nord de la Bolivie.* Paris, 1853. Chap. xiii.

* I speak here of *Cinchona Calisaya* only, for several other species are still very common.

OBSERVATIONS ON THE COLORING MATTERS OF FLOWERS.

By E. Filhol.

White Flowers.—If flowers of *Viburnum opulus*, *Philadelphus coronarius*, *Chrysanthemum vulgare*, white roses, and a number of other flowers, be exposed for a few moments to the action of ammonia, they acquire a yellow tinge of greater or less intensity, which remains for a considerable time. Flowers of *Viburnum opulus* by this treatment acquire a yellow color as fine as that of *Cytisus laburnum*. The matter which thus becomes yellow under the influence of alkalies appears to be present in all white flowers; some flowers contain only a small quantity of it, but these are rare.

In variegated flowers of which the corolla is partially white, these portions usually acquire a fine yellow tint under the influence of ammonia. The stamina, the pistils, and in general all the white parts of flowers, act in the same manner. The leaves themselves become yellow when they are accidentally deprived of chlorophylle. I ascertained this fact with a plant of *Convallaria polygonatum*, of which the leaves presented alternate green and white bands. The latter became bright yellow from the action of ammonia, exactly like flowers. The tissue of some fruits also becomes yellow, although less distinctly, under the influence of alkalies.

The most convenient mode of converting a white flower into a yellow one is to introduce it into a wide-mouthed flask containing a little liquid ammonia, and to expose it to the action of the alkaline vapor. The change then takes place very rapidly. When the greatest part of the flower has become yellow, it may be taken out of the flask and exposed to the air, when the parts which still remained white will gradually change until the flower acquires a uniform tint. The flower may also be dipped into water, alcohol or ether, mixed with a little ammonia. The latter fluids should be preferred when the flower is covered with a fatty coating, which would prevent their being moistened by a watery fluid. If a white flower that has been rendered yellow be dipped into acidulated water, it gradually recovers its white color.

These experiments remind one that when dyers wish to employ the color of woad in dyeing, they add a little carbonate of soda to

their vat, which gives considerable brightness to the tint. It is easy to prove also that acids, even when very weak, cause the disappearance of the greater part of the color of a decoction of woad. From this it seems not improbable that the substance which communicates to white flowers the property of becoming yellow when in contact with alkalies may be *luteoline*.

If the petals of white roses be boiled with distilled water, and a little carbonate of soda and sulphate of copper be added to the decoction, as is done with the decoction of woad, a liquid is obtained possessing a bright golden-yellow color, which may be employed in dyeing yellow. This liquid will give a fine yellow tint to linen and cotton fabrics, and nearly all white flowers will furnish similar results. I have dyed pieces of linen and cotton with decoctions of white roses, of the flowers of *Spiræa filipendula*, *Philadelphus coronaria* and *Galium mollugo*.

The matter to which white flowers are indebted for this property of acquiring a yellow color under the influence of alkalies, dissolves readily in water, still more so in alcohol, but less in ether. When the superficial layer of the petals of flowers which have been colored yellow by ammonia is removed, all the cells are seen to be filled with a yellow fluid, in which no granules are to be perceived.

Dark Red Flowers.—With boiling water or alcohol, the flowers of the wild poppy furnish a violet-red solution. This acquires a fine scarlet color by the action of acids, even when very weak. If ammonia be poured into the liquid thus acidulated, it becomes of a fine violet color, without the least mixture of green. But if, instead of adding ammonia to the acidulated liquid, it is added directly to the infusion, this acquires a dirty greenish-red tint. When the flowers themselves are exposed to the action of ammonia, they acquire a fine violet color, like that obtained with the acidulated fluid. The coloring matter of the poppy, therefore, differs greatly from the cyanine of MM. Fremy and Cloez, for alkalies do not give it a green color.

The flowers of *Pelargonium zonale* also become of a fine violet color under the influence of ammonia; their coloring matter behaves like that of the poppy. The dark red garden verbena gives a violet-red tint to alcohol. The alcoholic solution, treated with ammonia, acquires a vinous color with a slight greenish tint. If

the alcoholic infusion of these flowers be digested with a little dry powdered hydrate of alumina, the latter acquires a light yellow color, and the supernatant fluid becomes of a fine red color under the influence of acids, and of a blue without the least mixture of green by the action of bases. The verbena consequently contains two distinct matters, of which one becomes blue under the influence of bases, whilst the other becomes yellow; it is to the mixture of these two matters that the green color of the alcoholic tincture of these flowers is due.

The petals of *Anemone hortensis* act like those of the verbena. The flowers of the red pæony become of a pure blue color under the influence of ammonia. These flowers are rapidly deprived of color by alcohol; the tincture which they furnish is but slightly colored, but it becomes of a deep and bright red by the addition of the smallest trace of acid. The acidulated liquid becomes blue with ammonia, whilst the non-acidulated alcoholic solution acquires a greenish tint. The petals of dark red roses become blue when exposed to ammoniacal vapors, but the color soon passes to a greenish-blue. Alcohol readily dissolves the coloring matter of roses, but acquires very little color. The slightest addition of acid communicates a deep red color to the alcoholic solution; ammonia poured into the acidulated liquid changes it to a greenish blue.

Rose-colored Flowers.—These flowers contain a mixture of two juices, of which one is colorless in acid liquids, whilst the other is red. The former becomes yellow when mixed with alkalies, the second becomes blue, and the mixture of these latter colors produces a green tint. Hence the tints which will be acquired by red or rose-colored flowers, when exposed to the action of ammoniacal vapors, may be easily indicated beforehand. It is clear that the green color will approach yellow more and more in proportion to the paleness of the rose, and that it will have a blue tendency in proportion as the color becomes deeper.

Blue Flowers.—The preceding statements regarding red and rose-colored flowers, applies also to blue flowers. The green color produced in blue flowers by the action of watery ammonia, tends more and more to yellow in proportion to the paleness of the flower.

Effects of the Mixture of the White and Colored Juices of Flowers.—When flowers of iris, of violets, of pæonies, of *Cercis siliquastrum*, &c., are infused in alcohol, one is struck with the weakness of tint of the alcoholic solution, even when the petals are completely deprived of color. It appears natural, at first sight, to attribute this decoloration to the influence of the alcohol, which may act as a reducing agent; but a close examination of the facts does not permit us to rest satisfied with this explanation; and without denying that alcohol may exercise the influence attributed to it by MM. Fremy and Cloez, I think that the following theory, either alone or combined with that just referred to, may readily account for the circumstances in question. In fact, if, instead of treating the above-mentioned flowers with alcohol, they are infused in boiling water, the watery solution is not more deeply colored than the alcoholic tincture. It would be necessary, therefore, to admit that water itself is a reducing agent, which is by no means probable.

If into these solutions, whether watery or alcoholic, the smallest quantity of a soluble acid be poured, they instantly acquire a bright red color, far deeper in tint than the original liquid. The kind of acid is quite immaterial, for even sulphurous acid immediately brightens the shade, and reproduces the color which was only concealed. The prolonged action of this acid, however, soon destroys the color. Can it be imagined that the coloring matter would reappear immediately upon the addition of *any* acid, if it had been reduced? And especially on this hypothesis, can we account for the action of sulphurous acid? I think not.

In my opinion, the decoloration is due to the mixture of the juice contained in the colorless cells with that of the colored cells. When alcohol or boiling water acts upon a flower, its organization is destroyed, the juices contained in its cells becomes mixed, and the coloring matter disappears. The following experiment lends support to this explanation.

If two equal volumes of a slightly acidulated infusion, either watery or alcoholic, of pæony flowers, be diluted, the one with four times its volume of water, the other with four times its volume of an infusion of white flowers, it will be seen that the latter will retain much less color than the former.

The white juices consequently destroy, or rather dissemble the

coloring matter. The question now arises, whether these juices act as reducing bodies, or whether they simply form colorless combinations. The experiments to which I have referred above may, I think, serve to answer this question; for if reduction takes place, sulphurous acid would not reproduce the color. I consider therefore, that the coloring matter does not experience any reduction, and that it forms with the elements of the colorless juices a colorless combination. In infusions prepared by the action of alcohol or water upon flowers, one portion of the coloring matter remains free, whilst the other enters into the combination just mentioned. It is easy to separate the colored portion from the colorless, by triturating the liquid with a little artificial phosphate of lime or dry hydrate of alumina; the colored part is the first to fix upon the solid body, whilst that of which the color is dissembled remains for the most part dissolved. If the liquid be filtered, it passes without color. It may then be colored red by acid, and green or blue by an alkaline solution.—*Chem. Gaz.*, Sept. 1, 1854, from *Comptes Rendus*, July 24, 1854, p. 194.

PROCESS FOR HELIOGRAPHIC ENGRAVING.

M. Baldus takes simply a plate of copper, and spreads upon it a sensitive coating of *bitumen of Judea*. Upon this plate, thus covered, he lays a photograph on paper of the object to be engraved. This photograph is positive, and must therefore impress a negative on the metal by the action of the light. After about a quarter of an hour's exposure to the sun, the image is produced upon the resinous coating, but is not visible, and it is made to appear by washing the plate with a solvent, which removes the parts not affected by the light, and allows the picture to be seen represented by the resinous lines of the bitumen. The design, however, is formed by a veil so delicate and thin, that it would soon partly disappear if the plate remained in the liquid. To give it the proper firmness and resistance, it is exposed for two days to the action of diffused light; the picture being thus strengthened by its exposure to daylight, the plate is plunged into a galvano-plastic bath of sulphate of copper. If, then, you attach the plate to the negative pole of the battery, you deposite, on the unprotected parts of the metal, a coating of copper in relief; but if you attach it to

the positive pole, you eat away the metal at these points, and thus form an engraving, so that you can, at will, according to the battery pole which you use, obtain either an engraving analogous to an ordinary copper-plate, which can be printed by the same process, or an engraving in relief, to be printed like a wood-cut, with printing ink.

When it is desired to reproduce an ordinary engraving, clearly executed upon paper, as in the case assumed above, the photograph requires no peculiar preparation previous to its transfer to the metal. But this is not generally the object of photographic engraving; it is to reproduce natural objects without any intermediate process. When, then, it is required to reproduce, for instance, objects of natural history, landscapes, or monuments, the photograph used must be got in a way somewhat different from the common mode. It is in fact, the production of that which engravers call the grain, that is, the lights, put by the graver in the shadows of the picture, which constitutes the essential difficulty in engraving photographs. The photograph has nothing of the kind, for the shadows are made of a uniform tint; we require, therefore, a peculiar artifice to produce this grain, which does not exist in the photograph. In the works of MM. Rousseau, Devéria, and Riffaut, they are produced afterwards on the plate by the graver. In the new process, proposed by M. Baldus, this grain, so necessary for the engraving, is formed on the photograph itself, and the use of the graver thus rendered superfluous. This grain is formed on the negative photograph, by adding to the sensitive substances a compound, which, crystallizing in the paper, forms small transparent grains. The complete publication of all the details of this new process, which the author will doubtless make, will allow the curious chemical effect which takes place under these circumstances, to be understood.

There remains but a single word to be added: the proofs on paper obtained by these new plates of photographic origin are so perfect, that the great problem of engraving by the agency of light may be regarded as definitely solved. Not only this new process is going to reduce very much the price of engravings, but there is no artist or amateur of photography, who may not soon have the pleasure of reproducing, in a corner of his room, all the photographs which he obtains.—*Journal of the Franklin Institute from Cosmos*, 26th May, 1854.

NEW PROCESS FOR PROCURING PHOSPHORUS.

By M. Cari-Montrand.

M. Dumas read to the Academy of Sciences, at Paris, at their Session of 15th May, a letter from a young chemist, M. Cari-Montrand, in which he proposes a new mode for the preparation of phosphorus on a practical scale, the usual process being slow, complicated, yielding but little product, and giving an educt of no value. The process proposed consists of passing over a thorough mixture of equal parts of finely-powdered charcoal and bone-earth, at a red heat, a quantity of dry hydro-chloric acid, or still better, of dry chlorine. The end of the porcelain tube in which the experiment was performed, was attached to a glass tube dipped under water. Phosphorus, carbonic oxide, and water, are given off, and chloride of calcium is left in the tube. On analysis, no trace of phosphoric acid, or any other compound, was found in the tube; the decomposition is therefore complete, and as no phosphorus passed off, the whole amount contained in the earth was obtained as a product. The following equation explains the reaction, when hydro-chloric acid is used:

$$3\,Ca.O,\,PO_5 + 5\,C + 3\,H\,Cl. = 5\,CO + 3\,HO + 3\,Ca.\,Cl. + P.$$

The same letter contains a notice interesting to chemists, of the entire decomposition of gypsum, and the procuring of its sulphuric acid, by treatment of a mixture with charcoal by dry chlorine, or hydro-chloric acid gas. A good deal of excitement appears to have been caused among some of the would-be scientific papers, by the announcement of this process, which, it was asserted, would materially reduce the price of sulphuric acid. But it will be easily seen that, at least the equivalent of hydro-chloric acid (dry weight 36), must be used for each equivalent of oil of vitriol, (weight 49,) the process would be more expensive than at present. This is clearly stated by M. Cari-Montrand, who had the process tried on a large scale by M. Kühlmann, but found that the expense of making and drying the hydro-chloric acid, was an insurmountable obstacle to its introduction into the arts.—*Journal of the Franklin Institute, Sept.*, 1854.

MEDICINAL CONSTITUENTS OF THE LEMON.

Dr. Cogswell read before the Physiological Society, (March 13, 1854), a paper on this subject. The author's attention had been drawn to the subject by the publications of Dr. Owen Rees, and others, on the treatment of rheumatism by lemon-juice. The remedy was no doubt often successful, but still there were many failures, and these did not seem to be sufficiently accounted for, as had been attempted, by reference to the different forms of the disease. But there was much uncertainty as to what constitutes lemonjuice. Has it always the same composition, or are there not various accidental circumstances attending its preparation, calculated to render one specimen different from another. Sometimes the fruit is ordered to be squeezed at home; at other times, the prescription is sent to a druggist, or the juice is allowed to be purchased where it is cheapest. When obtained from the fresh fruit, by depression, without removing the rind, it is a turbid, pale yellow fluid, exhaling a grateful odor of the essential oil, and of a specific gravity in different specimens between 1043 and 1047. By distilling a fresh specimen which had not been filtered, the author had obtained half a drachm of essential oil from 12 ounces; but from another, after filtering, only five minims. Some, purchased at a fruit-preserver's, which had stood for several months in a cask, and undergone a kind of fermentation, was bright yellow and clear, of density 1037, and yielded scarcely a trace of oil. It had received an impregnation of common salt from the former contents of the cask. A sample of lime-juice, procured from the stores of a merchant-vessel, smelt of rum, had a density of 1010, and contained a multitude of torulæ. The effect of the different processes for preserving the juice, mentioned by Christison, was to separate one or more of the ingredients which might be of consequence to its remedial efficacy. Heat would expel the essential oil, filtration remove the solid debris of the pulp, and the addition of alcohol with filtration withdraw the mucilaginous matter. It appeared that the druggists in London do not make a practice of keeping the juice ready on demand, but that they generally prepare it extemporaneously when ordered. The dose was equally a matter of uncertainty; for although it seemed o be the prevalent idea that the average produce of a lemon was

about half an ounce, the author had not found any ordinary specimen yield less than seven drachms, while the average was rather more than an ounce. Hence, he concluded that it was necessary to fix a standard for the composition and dose of the juice, before its remedial efficacy could be fairly tested. In the rind, besides the essential oil, the author observed granules of starch. A decoction of the white spongy portion afforded pectine, hesperidine, and a trace of tannin. Hesperidine was discovered by M. Lebreton, who employed orangettes; but his process was complicated and unproductive. The author had found it was deposited in crystals by evaporating a decoction of the white portion of the rind, while in the same portion of the shaddock, it was separated by simple maceration in cold water, and could be collected in a filter. A specimen as thus obtained, was exhibited to the Society. It had a decidedly bitter taste, but turned, not red, as commonly stated, but yellow with sulphuric acid.

Another principle, called *aurantiin*, was supposed to be the source of the bitterness of the lemon tribe; but its existence had not been demonstrated, and the author was disposed to regard the hesperidine as the true bitter principle. The essential oil belonged to a class corresponding to the formula C_5H_4, and including the other oils of the fruits of the lemon tribe, the oils of turpentine, juniper, savine, elemi, copaiba, cubebs, and pepper. Some of these were approved remedies in rheumatism. From trials made with the oil of lemon in this disease, in flatulent dyspepsia, and leucorrhœa, the author entertained a high opinion of its therapeutical value, and thought that the chemical fact stated, suggested the possibility of bringing together the various scattered evidences on the medicinal effects of the oils of the same class, and referring them to a general law. The fresh juice, when evaporated in a water bath, yielded about 8.5 grains per cent. of solid extract, and the ash obtained by incineration amounted to 0.27 per cent. The latter contained sulphuric and phosphoric acids, potash, lime, magnesia and iron. A controversy existed as to whether the citric acid or the potash, in lemon-juice, was the true medicinal constituent. In reviewing the evidence, the author conceived that it was an error to suppose that either of them would answer so well separately. The efficiency of the juice probably depended, not on one or the other of the ingredients, but on the whole combined. In

using the essential oil, he gave it in doses of about fifteen minims, with two drachms of vinegar in decoction of barley, always being careful to keep the bowels freely open by purgatives. If the efficacy of lemon-juice in acute rheumatism depended on anything more than the refrigerant action of the citric acid, he thought the true anti-arthritic agent was the essential oil when present, and repeated his views as to the necessity of establishing a standard for the composition of the juice. A table was exhibited, showing the correspondence in composition of the non-oxygenated essential oils mentioned in the paper.—*Hays' Journal, from Med. Times and Gaz., April* 1, 1854.

Varieties.

On Perfumery. By Septimus Piesse.

Continued from page 470.

Rosemary.—

"There's rosemary, that's for remembrance."—Shakespeare.

By distilling the *Rosmarinus officinalis* a thin limpid essential oil is procured, having the characteristic odor of the plant, which is more aromatic than sweet. One cwt. of the fresh herb yields about twenty-four ounces of oil. Essential oil of rosemary is very extensively used in perfumery, especially in combination with other essential oils, for scenting soap. Eau de Cologne cannot be made without it, and in the once famous "Hungary water," it is the leading ingredient. The following is the composition of

Hungary Water.

Rectified alcohol	1 gallon.
Oil of English rosemary	2 oz.
" lemon peel	1 oz.
" balm (*melissa*)	1 oz.
" mint	½ drachm.
Esprit de rose	1 pint.
Extract of fleur d'orange	1 pint.

It is put up for sale in a similar way to eau de Cologne, and is said to take its name from one of the queens of Hungary, who is reported to have derived great benefit from a bath containing it, at the age of seventy-five years. There is no doubt that clergymen and orators, while speaking for any time, would derive great benefit from perfuming their handkerchiefs

with Hungary water or eau de Cologne, as the rosemary they contain excites the mind to a vigorous action, sufficient of the stimulant being inhaled by occasionally wiping the face with the handkerchief containing these "waters." Shakespeare giving us the key, we can understand how it is that such perfumes containing rosemary are universally said to be "so refreshing."

Rhodium.—When the rose wood, the lignum of the *Convolvulus scoparius*, is distilled, a sweet-smelling oil is procured, resembling in some slight degree the fragrance of the rose, and hence its name. At one time, that is, prior to the cultivation of the rose-leaf geranium, the distillates from rose wood and from the root of the *Genista canariensis* (canary rose wood), were principally drawn for the adulteration of real otto of roses, but as the geranium oil answers so much better, the oil of rhodium has fallen into disuse, hence its comparative scarcity in the market at the present day, though our grandfathers knew it well. One cwt. of wood yields about three ounces of oil.

Ground rose wood is valuable as a basis in the manufacture of sachet powders for perfuming the wardrobe.

The French have given the name jacaranda, to rosewood, under the idea that the plant called jacaranda by the Brazilians yields it, which is not the case; the same word has perhaps been the origin of palisander—palixander, badly written.

Sage.—A powerful scenting oil can be procured by distillation from any of the *Salvieæ*. It is rarely used, but is nevertheless very valuable in combination for scenting soap.

Dried sage leaves, ground, will compound well for sachets.

Santal.—*Santalum album*.

> "The santal tree perfumes, when riven,
> The axe that laid it low."—Cameron.

This is an old favorite with the lovers of scent: it is the wood that possesses the odor. The finest santal wood grows in the island of Timor, and the Santal Wood Islands, where it is extensively cultivated for the Chinese market. In the religious ceremonies of the Brahmins, Hindoos, and Chinese, santal wood is burned by way of incense to an extent almost beyond belief. The *Santala* grew plentifully in China, but the continued offerings to the Buddahs have almost exterminated the plant from the Celestial Empire; and such is the demand, that it is about to be cultivated in Western Australia, in the expectation of a profitable return, which, we doubt not, will be realized; England alone would consume tenfold the quantity she now does, were its price within the range of other perfuming substances.—The essential oil which exists in the santal wood, is readily procured by distillation; one cwt. of good wood will yield about thirty ounces of oil.

The white ant, which is so common in India and China, eating into every organic matter that it comes across, appears to have no relish for santal

wood, hence it is frequently made into caskets, jewel-boxes, deed-cases, &c. This quality, as well as its fragrance, renders it a valuable article to the cabinet-makers of the East.

The essential oil of santal is remarkably dense, and is, above all others, oleaginous in its appearance, and, when good, is of a dark straw color. When dissolved in spirit, it enters into the composition of a great many of the old-fashioned bouquets, such as "Marechale," and others, the formula of which will be given hereafter. Perfumers thus make what is called

EXTRAIT DE BOIS DE SANTAL.

Rectified Spirits	7 pints.
Esprit de rose	1 pint.
Essential oil of santal	3 oz.

All those *Extracts* made by dissolving essential oil in alcohol, are nearly *white*, or at least only slightly tinted by the color of the oil used. When a perfumer has to impart a delicate *odeur* to a lady's *mouchoir*, which in some instances cost "no end of money," and is an object, at any cost, to retain unsullied, it behoves his reputation to sell an article that will not stain a delicate white fabric. Now, when a perfume is made in a direct manner from any wood or herb, as tinctures are made, that is, by infusion in alcohol, there is obtained, besides the odoriferous substance, a solution of coloring and extractive matter, which is exceedingly detrimental to its fragrance, besides seriously staining any cambric handkerchief that it may be used upon; and for this reason this latter method should never be adopted, except for use upon silk handkerchiefs.

The odor of santal assimilates well with rose; hence, prior to the cultivation of rose-leaf geranium, it was used to adulterate otto of roses; but is now but seldom used for that purpose.

By a "phonetic" error, santal is often printed "sandal," and "sandel."

SASSAFRAS.—Some of the perfumers of Germany use a tincture of the wood of the *Laurus sassafras* in the manufacture of hair-washes and other nostrums: but as, in our opinion, it has rather a "physicky" smell than flowery, we cannot recommend the German recipes. The *Eau Athenienne*, notwithstanding, has some reputation as a hair water, but is little else than a weak tincture or sassafras.

SPIKE.—French oil of lavender, which is procured from the *Lavendula spica*, is generally called oil of spike. [See Lavendula.]

STORAX and TOLU are used in perfumery in the same way as benzoin, namely, by solution in spirit as a tincture. An ounce of tincture of storax tolu, or benzoin, being added to a pound of any very volatile perfume, gives a degree of permanence to it, and makes it last longer on the handkerchief than it otherwise would: thus, when any perfume is made by the solution of an essential oil in spirit, it is usual to add to it a small portion of a substance which is less volatile, such as extract of musk, extract of vanilla,

ambergris, storax, tolu, orris, vitivert, or benzoin; the manufacturer using his judgment and discretion as to which of these materials are to be employed, choosing, of course, those which are most compatible with the odor he is making.

The power which these bodies have of "fixing" a volatile substance, renders them valuable to the perfumer, independent of their aroma, which is due in many cases to benzoic acid, slightly modified by an essential oil peculiar to each substance, and which is taken up by the alcohol, together with a portion of resin. When the perfume is put upon a handkerchief, the most volatile substances disappear first; thus, after the alcohol has evaporated, the odors of the essential oil appear stronger; if it contains any resinous body, the essential oils are held in solution, as it were, by the resin, and thus retained on the fabric. Supposing a perfume to be made of essential oils only, without any "fixing" substance, the perfume "dies away," the olfactory nerve, if tutored, will detect its composition, for it spontaneously analyses itself, no two essential oils having the same volatility; thus, make a mixture of rose, jessamine, and patchouly; the jessamine predominates first, then the rose, and, lastly, the patchouly, which will be found hours after the others have disappeared.

Tuberose.—One of the most exquisite odors with which we are acquainted, is obtained by *enfleurage* from the tuberose flower. It is, as it were, a nosegay in itself, and reminds one of the perfume observed in a well-stocked flower garden at even close, consequently it is much in demand by perfumers for compounding sweet essences.

Extract of Tuberose.

Six pounds of No. 24 tuberuse pomatum cut up very fine, is to be placed into 1 gallon of the best rectified spirit. After standing for three weeks or a month at summer heat, and with frequent agitation, it is fit to draw off, and being strained through cotton wool, is ready for either sale or use in the manufacture of bouquets.

This essence of tuberose, like that of jessamine, is exceedingly volatile, and if sold in its pure state quickly "flies off" the handkerchief; it is therefore necessary to add some fixing ingredient, and for this purpose it is best to use one ounce of extract of orris, or half an ounce of extract of vanilla, to every pint of tuberose.

Thyme.—All the different species of thyme, but more particularly the lemon thyme, the *Thymus serpyllum*, as well as the marjorans, origanum, &c., yield, by distillation, fragrant essential oils, that are extensively used by manufacturing perfumers for scenting soaps; though well adapted for this purpose, they do not answer at all in any other combinations. Both in grease and in spirit all these oils impart a herby smell (very naturally) rather than a flowery one, and as a consequence, are not considered *recherché*.

When any of these herbs are dried and ground, they usefully enter into the composition of sachet powders.

Tonquin, or Tonka.—The seeds of the *Dipterex odorata* are the tonquin or *coumarouma* beans of commerce. When fresh they are exceedingly fragrant, having an intense odor of newly-made hay. The *Anthoxanthum odoratum*, or sweet-smelling vernal grass, to which new hay owes its odor, probably yields identically the same fragrant principle, and it is remarkable that both tonquin beans and vernal grass, while actually growing, are nearly scentless, but become rapidly aromatic when severed from the parent stock.

Chemically considered, tonquin beans are very interesting, containing, when fresh, a fragrant volatile oil, (to which their odor is principally due), benzoic acid, a fat oil and a neutral principle—*Coumarin*. In perfumery they are valuable, as, when ground, they form with other bodies an excellent and permanent sachet, and, by infusion in spirit, the tincture or extract of tonquin enters into a thousand of the compound essences, but, on account of its great strength, it must be used with caution, otherwise, people say, your perfume is "snuffy," owing to the predominance of the odor and its well-known use in the boxes of those who indulge in the titillating dust.

Extract of Tonquin.

Tonquin beans	2 lbs.
Rectified spirit	1 gallon.

Digest for a month at summer heat. Even after this maceration they are still useful, when dried and ground, in those compounds known as Pot Pourri, Olla Podrida, &c. The extract of tonquin, like extract of orris and extract of vanilla, is never sold pure, but is only used in the manufactory of compound perfumes. It is the leading ingredient in *Bouquet du Champ*, the field bouquet, the great resemblance of which to the odor of the hay-field, renders it a favorite to the lovers of the pastoral.

Vanilla, also called Banilloes.—The pod or bean of the *Vanilla plantifolio* yields a perfume of rare excellence when good; and if kept for some time, it becomes covered with an efflorescence of needle crystals, possessing properties similar to benzoic acid, but differing from it in composition. Few objects are more beautiful to look upon than this, when viewed by the microscope with the aid of polarized light.

Extract of Vanilla.

Vanilla pods	½ lb.
Rectified spirit	1 gallon.

Slit the pods from end to end, so as to lay open the interior, then cut them up in lengths of about a quarter of an inch, macerate with occasional agitation, for about a month, the tincture thus formed will only require straining through cotton to be ready for any use that may be required. In this

state it is rarely sold for a perfume, but is consumed in the manufacture of compound odors, bouquets, or nosegays, as they are called.

Extract of vanilla is also used largely in the manufacture of hair-washes, which are readily made by mixing the extract of vanilla with either rose, orange, elder, or rosemary water, and afterwards filtering.

We need scarcely mention that vanilla is greatly used by cooks and confectioners for flavoring.

VERBENA, or VERVAINE.—The scented species of this plant, the lemon verbena, *Aloysia citri odora* (Hooker), gives one of the finest perfumes with which we are acquainted; it is well known as yielding a delightful fragrance by merely drawing the hand over the plant; some of the little vessels or sacks containing the essential oil must be crushed in this act, as there is little or no odor by merely smelling at the plant.

The essential oil, which can be extracted from the leaves by distillation with water, on account of its high price, is rarely, if ever, used by the manufacturing perfumer, but it is most successfully imitated by mixing the oil of lemon grass, *Andropogon schoenanthus*, with rectified spirit, the odor of which resembles the former to a nicety. The following are good forms for making the

EXTRACT OF VERBENA.

Rectified spirit	1 pint.
Oil of lemon grass	3 drachms.
" lemon peel	2 oz.
" orange peel	½ oz.

After standing together for a few hours, and then filtering, it is fit for sale.

Another mixture of this kind, presumed by the public to be made from the same plant, but of a finer quality, is composed thus—it is sold under the title of

EXTRAIT DE VERVEINE.

Rectified spirit	1 pint.
Oil of orange peel	1 oz.
" lemon peel	2 oz.
" citron	1 dram.
" lemon grass	2½ drams.
Extrait de fleur d'orange	7 oz.
" tubereuse	7 oz.
Esprit de rose	½ pint.

This mixture is exceedingly refreshing, and is one of the most elegant perfumes that is made. Being white it does not stain the handkerchief. It is best when sold fresh made, as by age the citrine oils oxidize, and the perfume acquires an ethereal odor, and then customers say "it is sour." The vervaine thus prepared, enters into a great many of the bouquets, that are sold under the title of the "Court Bouquet," and others which are mix-

tures of violet, rose, and jessamine, with verbena or vervaine in different proportions. In these preparations, as also in Eau de Portugal, and in fact where any of the citrine oils are used, a much finer product is obtained by using grape spirit or brandy, in preference to the English corn spirit, as a solvent for them. Nor do they deteriorate so quickly in French spirit as in English. Whether this be due to the oil in the wine (œanthic ether) or not we cannot say, but think it is so.

Vitivert, or Kus-Rus, is the rhizome of an Indian grass. In the neighborhood of Calcutta, and in the city, this material has an extensive use by being manufactured into awnings, blinds, and sunshades. During the hot seasons an attendant sprinkles water over them; this operation cools the apartment by the evaporation of the water, and, at the same time, perfumes the atmosphere, in a very agreeable manner, with the odoriferous principle of the vitivert. It has a smell between the aromatic or spicy odor and that of flowers—if such a distinction can be admitted. We classify it with orris root, not that it has any odor resembling it, but because it has a like effect in use in perfumery, and because it is prepared as a tincture for obtaining its odor.

About four pounds of the dried vitivert, as it is imported, being cut small and set to steep in a gallon of rectified spirits for a fortnight, produces the Essence of Vitivert of the shops. In this state it is rarely used as a perfume, although it is occasionally asked for by those who, perhaps, have learnt to admire its odor by their previous residence in "the eastern clime.' The extract essence, or tincture of vitivert, enters into the composition of several of the much-admired and old boquets manufactured in the early days of perfumery in England, such as "*Mousselaine des Indies*," for which preparation, M. Delcroix, in the zenith of his fame, created quite a *furor* in the fashionable world.

Marachele and Boquet du Roi, perfumes which have also "had their day," owe much of their peculiarity to the vitivert contained in them.

Bundles of vitivert are sold for perfuming linen and preventing moth, and when ground, is used to manufacture certain sachet powders.

Violet.—

> "The forward violet thus did I chide:
> Sweet thief, whence didst thou steal thy sweet that smells,
> If not from my love's breath?"

The perfume exhaled by the *Viola odorato* is so universally admired, that to speak in its favor would be more than superfluous. The demand for the "essence of violets" is far greater than the manufacturing perfumers are at present able to supply, and, as a consequence, it is difficult to procure the genuine article through the ordinary sources of trade.

Real violet is, however, sold by many of the retail perfumers of the West End of London, but at a price that prohibits its use except by the affluent or extravagant votaries of fashion. The true smelling principle or essential oil of violets has never yet been isolated: a very concentrated solution

in alcohol impresses the olfactory nerve with the idea of the presence of hydrocyanic acid, which is probably a true impression. Burnett says that the plant *Viola tricolor* (heart's ease,) when bruised, smells like peach kernels, and doubtless, therefore, contains prussic acid.

The flowers of the heart's ease are scentless, but the plant evidently contains a principle which, in other species of the viola, is eliminated as the "sweet that smells" so beautifully alluded to by Shakspeare.

For commercial purposes, the odor of the violet is procured in combination with spirit, oil, or suet, precisely according to the methods previously described for obtaining the aroma of some other flowers before mentioned, such as those for cassie, jessamine, orange flower, namely, by maceration, or by *enfleurage*, the former method being principally adopted, followed by when "essence" is required, digesting the pomade in rectified alcohol.

Good essence of violet, thus made, is of a beautiful green color, and, though of a rich deep tint, has no power to stain a white fabric, and its odor is perfectly natural.

The essence of violet, as prepared for retail sale, is thus made, according to the quality and strength of the pomade:—Take from six to eight pounds of the violet pomade, chop it up fine, and place it into one gallon of perfectly clean (free from fusel oil) rectified spirit, allow it to digest for three weeks or a month, then strain off the essence, and to every pint thereof add three ounces of tincture of orris root, and three ounces of esprit de rose; it is then fit for sale.

We have often seen displayed for sale in druggists' shops plain tincture of orris root, done up in nice bottles, with labels upon them inferring the contents to be "Extract of Violet;" customers thus once "taken in" are not likely to be so a second time.

A good Imitation Essence of Violets is best prepared thus—

Spirituous extract of cassie pomade . .	1 pint.
Esprit de rose	½ pint.
Tincture of orris	½ pint.
Spirituous extract of tuberose pomade . .	½ pint.

After filtration it is fit for bottling. In this mixture, it is the extract of cassie which has the leading smell, but modified by the rose and tuberose becomes very much like the violet. Moreover, it has a green color, like the extract of violet; and as the eye influences the judgment by the sense of taste, so it does with the sense of smell. Extract of violet enters largely into the composition of several of the most popular boquets, such as extract of spring flowers and many others.

Volkameria.—An exquisite perfume is sold under this name, presumed, of course, to be derived from the *Volkameria inermis* (Lindley.) Whether it has a smell resembling the flower of that plant, or whether the plant at all, we are unable to say. It is a native of India, and seems to be little known even in the botanic gardens in this country; however, the plant has

a name, and that's enough for the versatile Parisian Perfumer, and if the mixture he makes "takes" with the fashionable world—the plant which christens it has a fine perfume for a certainty!

ESSENCE OF VOLKAMERIA.

Esprit de violette	1 pint.
" tubereuse	1 pint.
" jasmine	¼ pint.
rose	½ pint.
Essence de musck	2 ounces.

WALLFLOWER (*Cherianthus.*)—Exquisite as is the odor of this flower, it is not used in perfumery, though no doubt it might be, and very successfully too, were the plant cultivated for that purpose. To this flower we would direct particular attention, as one we consider well adapted for experiments to obtain its odoriferous principle in this country; our climate being good for its production. The mode for obtaining its odor has been indicated when we spoke of Heliotrope, page 234. And if it answers on the small scale, there is little doubt of success in the large way, and there is no fear but that the scent of the old English wallflower will meet with a demand.

AN IMITATION ESSENCE OF WALLFLOWER can be compounded thus:—

Extract fleur d'orange	1 pint.
" vanilla	½ pint.
Esprit de rose	1 pint.
Extract of orris	½ pint.
" cassie	½ pint.
Essential oil of almonds	¼ drachm.

Allow this mixture to be made for two or three weeks prior to putting it up for sale.

WINTER GREEN (*Trientalis Europea.*)—A perfuming essential oil can be procured by distilling the leaves of this plant: it is principally consumed in the perfuming of soaps. Upon the strength of the name of this odorous plant a very nice handkerchief perfume is made.

ICELAND WINTER GREEN.

Esprit de rose	1 pint.
Essence of Lavender	¼ pint.
Extract of neroly	½ pint.
" vanilla	½ pint.
" vitivert	¼ pint.
" cassie	½ pint.
" ambergris	¼ pint.

We have now described all the important odoriferous bodies which are used by the manufacturing perfumer, as derived from the botanic kingdom; it may be understood, that where an odoriferous material is unnoticed, it

has no qualities peculiar enough to be remarked on, and that the methods adopted for preparing its essence, extract, water, or oil, is analogous to those that have already been noticed, that is, by the processes of *maceration, absorption,* or *enfleurage* for flowers, *by tincturation* for roots and by *distillation* for seeds, modified under certain circumstances.

There are, however, three other important derivative odors—ambergris, civet and musk-which being from the animal kingdom, are treated separately from plant odors, in order, it is considered, to render the whole matter less confused to manufacturers making reference to them. Ammonia and acetic acid, holding an indefinite position to the order we have laid down, may also come in here without much criticism, being considered as primitive odors.

On terminating our remarks relating to the simple preparations of the odors of plants, and before we speak of perfumes of an animal origin, or of those compound *odors* sold as boquets, nosegays, &c., it may probably be interesting to give a few facts and statistics, showing the consumption in England, of the several substances previously named.

QUANTITIES OF ESSENTIAL OILS, PAYING 1*s* PER POUND DUTY, ENTERED FOR HOME CONSUMPTION IN THE YEAR 1852.

	lbs.
Essential oil of bergamot	28,574
" " carraway	3,602
" " cassia	6,163
" " cloves	595
" " lavender	12,776
" " lemon	67,348
" " mint and spearmint	163
Otto of roses	1,268
Essential oil of peppermint	16,059
" " thyme	11,418
" " lemon grass	47,380
" " citronella	
And other oils not otherwise described	
Total essential oils imported in one year	195,346

Paying a duty of 1*s*. per pound, yield a revenue annually of £9,766 16*s*.

It would appear by the above return that our consumption of essential oil of cloves was exceedingly small; whereas it is probably ten times that amount. The fact is, several of the English wholesale druggists are very large distillers of this oil, leaving little or no room for the sale and importation of foreign distilled oil of cloves. Again, the oil of carraway, the English production of that article, is quite equal to the foreign: also, oil of lavender, which is drawn in this country probably to the extent of 6000lbs. annually.

There were also passed through the Custom House for home consumption in 1852—

Pomatums, procured by enfleurage maceration, &c., commonly called "French Pomatums," average value of 6*s.* per pound, and paying a duty of 1*s.* per pound, valued by the importers at	£1,306
Perfumery not otherwise described; value . . .	1,920
Bottles of eau de Cologne, paying a duty of 1*s.* each* .	19, 777

Revenue from eau de Cologne manufactured out of England say 20,000 flacons at 8*d.* 8,000*l.* annually.

The total revenue derived from various sources, even upon these low scale of duties, from the substances with which "Britannia perfumes her pocket handkerchief," cannot be estimated at less than 40,000*l* annum. This, of course, includes the duty upon the spirits used in the home manufacture of perfumery.

The ridiculous assertion which Dr. Lyon Playfair has made in his lectures, and published in the "Journal of the Society of Arts," in "Household Words," and "Chambers's Journal," viz., that "the main source of the essences used for perfumery were derived from the drainings of cow houses," is emphatically contradicted by the books of her Majesty's Honorable Board of Customs, independent of any chemical proof to the contrary. Such "clap-trap science" is unworthy of philosophy.—*Annals of Pharmacy.*

The Seeds of Asparagus a Substitute for Coffee.—Baron Liebig has discovered that the seeds of asparagus contain large portions of taurine analogous to that which is found in coffee, and therefore may be found a substitute for that delicious and universally-adopted beverage. They have been tested in England, and found to possess all the richness, flavor and aroma of the best Mocha coffee. This will be interesting information to the consumers of coffee, as the imported article now commands an exorbitant price in our markets, while the asparagus is easily cultivated and prolific in its yield.—*Boston Medical and Surgical Journal, July* 19, 1854.

Alum as an Emetic.—Besides the great usefulness of alum as an emetic for croup, it has been found in one case more efficient in poisoning by opium than the sulphate of zinc. The patient had swallowed an ounce of powdered opium! Thirty grains of sulphate of zinc were given him without effect, when Dr. Meigs, being called in, he gave him half an ounce of powdered alum, which, with three tumblers of warm water, caused copious vomiting. After a short period this treatment was repeated with a like effect, and the patient recovered. This case shows the powerful emetic properties of alum, which should be remembered in cases of emergency.—*Memphis Medical Recorder.*

*The duty on eau de Cologne is now, according to the last tariff, 8*d*, per flacon, or 20*s*. per gallon.

Minutes of the College.

At a stated meeting, held 9th mo. 25, 1854.

Samuel F. Troth, First Vice President, in the Chair.

The minutes of the previous meeting were read and adopted.

The minutes of the Board of Trustees for the past six months were then read, which informed that the following candidates having presented themselves for examination, at the stated time, in June, were approved, and accordingly elected Graduates in Pharmacy:

Henry N. Rittenhouse, thesis on Buchu,
John M. Ruch, " Gillenia,
Thomas Lancaster, " Syrup of Protonitrate of Iron.

The minutes of the Board inform of the death of one of their number—WILLIAM D. LIVERMORE—and contain a fitting tribute to his memory.

A report was read from the Committee on Latin Labels, informing of the publication of a new edition of the labels, in bronze, on highly glazed paper.

A communication resigning his membership in the College, was received from Charles S. Braddock, and was accepted.

Letters from V. Regnault, dated Paris, Feb. 15, and from Michael Donovan, dated Dublin, Aug. 23rd, to the Corresponding Secretary, in answer to letters notifying them of election to Honorary Membership, were received and placed on the file.

The delegates appointed to attend the late meeting of the American Pharmaceutical Association, held in Cincinnati, reported, that although none of their number could arrange it to leave home at the time appointed, the College was represented at the meeting by Professor Procter, one of the original members of the Association, and by him the College was informed that, although the attendance was small, the best feeling prevailed, and a large amount of work was placed in the hands of Committees to report at the next annual meeting, to be held in New York, on the second Tuesday in September, 1855.

Copies of the *Proceedings* and of an *Address*, in pamphlet form, designed for general circulation among druggists and apothecaries, their clerks and apprentices, published by the Executive Committee, of the Association, were presented, and the following, offered by Dr. John Harris, was adopted:

Whereas, The American Pharmaceutical Association, at its late Annual Meeting, passed a resolution recommending to the several Colleges of Pharmacy the appointment of Committees of Correspondence, "who shall

address apothecaries in their respective sections upon the objects of the Association and for the promotion of its designs,

Resolved, That the Chairman appoint five members from the College at large, with a view to the objects recommended by the Association, and to distribute the 300 copies of the Proceedings falling to our share, and the five hundred copies of the "Address to Druggists and Apothecaries, their Clerks and Apprentices," subscribed for by the Board of Trustees.

The Committee was then appointed, as follows:--Dr. John Harris, Wm. J. Jenks, S. N. James, Henry M. Troth, and E. Parrish.

Prof. Thomas offered a resolution, that all the Life Members and Contributing members of the College be furnished with the American Journal of Pharmacy free of charge.

After much discussion, the resolution was referred to the Publishing Committee, to report at the next Stated Meeting.

The semi-annual election for eight Trustees resulted in the choice of

Thos. P. James,	Jacob L. Smith,
Wm. J. Jenks,	E. T. Ellis,
A. B. Taylor,	Dr. J. Harris,
C. Bullock,	H. C. Blair, and

S. N. James, for the unexpired term of W. W. D. Livermore, deceased.

Then adjourned.

EDW. PARRISH, *Sec't'y.*

Editorial Department.

THE LONDON PHARMACOPŒIA AND THE PHARMACEUTICAL SOCIETY.—Previous to the last revision of the London Pharmacopœia, the Royal College of Physicians, as had been previously their habit, employed Mr. Richard Phillips to perform such chemical investigations as were needed during the revision, and they also addressed circulars to several individual pharmaceutists eliciting special practical information. The council of the Pharmaceutical Society being of the opinion that the Royal College would be best served by addressing the Society in its official capacity, this opinion was communicated to the College, who at the time did not avail themselves of the Society's aid, although they entertained the suggestion, and have recently opened the subject, which has resulted in the appointment of a "Committee of Revision" by the Council of the Pharmaceutical Society, consisting of Messrs. Dean, Davenport, Squire, Mason, Hooper, Garden, and Bell, who will report to the Council. We regard this movement as indicative of a great improvement in the *standing* of the Pharmaceutical Chemists of London, and of the good feeling of physicians toward them, as the Royal College is perhaps the most aristocratical medical body in the world.

CAVENDISH SOCIETY.—There are now twelve volumes of the publications of this Society to be had on subscribing, viz., 8 volumes of Gmelin's Handbook, 2 volumes of Lehmann's Physiological Chemistry, the Atlas of Microscopic Drawings, by Otto Funke, to accompany it, and the Life of Cavendish. There is yet due to the Subscribers for 1853, the 1st volume of Bischoff's Elements of Chemical and Physical Geology; and the Life of Dalton, by Dr. Henry, of Manchester, is published in England but has not reached the Secretaries here. It is to be regretted that so much delay attends the issue of the books. Bischoff's work has been kept back by the author's delay in furnishing the revised sheets; why the third volume of Lehmann has not appeared we are not informed. The six volumes of the Handbook of Gmelin, comprising the whole of the inorganic chemistry, can now be had separately of the Secretary at Philadelphia, as per advertisement.

Handbook of Chemistry, Theoretical, Practical, and Technical. By F. A. ABEL, Professor of Chemistry at Woolwich, &c., and L. BLOXAM, of the Royal College of Chemistry. *With a Preface by* DR. HOFFMAN, *and numerous Illustrations on Wood.* Philadelphia; Blanchard & Lea. 8vo. pp. 681. 1854.

Many years have not elapsed since the chemical student, who sought information on any of the practical points relating to analytical investigation, had to search in the treatises of Continental Europe. The few works of English and American origin were confined chiefly to descriptive chemistry,

and the translations were few and mostly of the same nature. The change commenced with Griffin's Translation of Rose, in 1831, and subsequently Liebig and Frezenius have been transformed. Since then, the English, slow to move, but steady and onward when started, have taken hold of the subject, and we have had a series of works on analysis, by Bowman Noad, and now the handbook of Messrs. Abel and Bloxam, which differs materially from any of its predecessors, in so far as it is a combination of descriptive and analytical chemistry, and is intended as a guide—a *handbook*—for the laboratory student.

In taking a bird's-eye view of the book it will be found to consist of three parts, besides an introductory chapter, of about twenty-five pages, on specific gravity, the laws and rules of crystallization, solution, chemical affinity, chemical notation, etc. The first of these divisions is on chemical manipulation, and is a condensed view of the subject presented in Farraday's or Morfit's Manipulations, embracing gasometry, distillation, solution, evaporation, crystallization, and the various branches of heat manipulation, requiring furnaces blowpipes, crucibles, etc., describing apparatus, and the manner of mounting and using it.

The second principal division, entitled Elementary Chemistry, describes the non-metallic and metallic elements, and their principal binary and saline compounds, and extends over 480 pages. In general, the descriptions are terse, lucid, well illustrated with symbolic notations, and eminently practical; being thereby better adapted to laboratory purposes. The authors have extended those articles which bear a prominent position in the arts, as gunpowder, cement, glass, steel, etc. They have introduced numerous foot notes, referring to other methods of preparing substances, or to recent or uncorroborated observations which assist the reader materially. In reference to the peculiarities of the authors' arrangement, a little needs to be said. Ozone is brought in under oxygen, ammonia under nitrogen, cyanogen under carbon. The grouping of the metals is somewhat different from that usually found. Gold and the platinum metals are grouped with copper and cadmium, whilst silver, lead and mercury are associated.

After having passed through the description of metallic bodies, the reader is struck with the abrupt termination of the descriptive chapters by the entire omission of organic chemistry. Nor will he, on carefully reading the preface, be able to ascertain what reason the authors offer for so important an omission, at this time, when organic chemistry claims so much interest from all interested in chemical science. There is another *hiatus* yet to be filled, not only in this but in other analogous works, and one that is greatly needed by the pharmaceutist and physician, that is *a treatise on the proximate analysis of organic substances.* Such a treatise would have been peculiarly appropriate in this work, intended, as it is, for the analytical student. We know of no work on this subject in the English language, and in French the treatise of Chevreul, published in 1824, is too ancient to be of much service now-a-days. What we mean, is a work that will go into the details of the manipulations required in the isolation and purifica-

tion of vegetable and animal principles, giving not only the method of qualitative analysis, but the more difficult ones by which the chemist is enabled to determine the quantitative proportions of the several proximate ingredients of plants or animals, or their parts. Such a work can only be written by a chemist, experienced in *treating* organic matter, both as regards the detection of principles admixed with others, and with their intimate mutual relations and reactions, so as to point out successful means of separating them without decomposition or change.

The third division of the book is devoted to analytical chemistry. The methods given are in the main those employed at Dr. Hoffman's laboratory, in the College of Chemistry, at London. In this part of the work the authors are perfectly at home, and write from their own experience the directions they offer to others; they have not unnecessarily burthened the directions with detail, and have, wisely, we think, introduced practical examples of analysis, instead of abstract statements of the modes of proceedings under certain circumstances. Having omitted organic chemistry, the ultimate analysis of organic bodies is also omitted, which would hardly have been expected, unless it be the design of the authors to bring out a separate treatise on the chemistry and analysis of organic substances.

Among the practical examples of analysis, we notice those of chrome ore, pewter, type metal, tartar emetic, ultramarine, soils, mineral waters, glass, and the ashes of vegetable and animal substances. The publishers have advantageously introduced a number of wood-cuts, illustrative of the text, the original being entirely without them.

The paper and printing is of good quality and style, but our time has not permitted a critical examination of the typography, which, from the very free use of chemical equations, has been necessarily more liable to error.

Upon the whole, we have been gratified with the book, and believe it will prove useful to students of practical chemistry, as well as to druggists and others, who often need the kind of information it offers. As "a handbook of chemistry, theoretical, practical, and technical," it is certainly deficient in the absence of the description of organic substances, which now, especially to physicians and pharmaceutists, constitutes the most interesting, if not the most important part of chemical science.

The American Eclectic Dispensatory. By JOHN KING, M. D., Prof. of Obstetrics in the Cincinnati Eclectic Medical Institute, and formerly Professor of Materia Medica in Memphis Institute. Cincinnati: Moore, Wilstach & Keys, 1854, pp. 1391.

The publishers of the American Eclectic Dispensatory, having politely sent us a copy of that work, we have taken some pains to give it a careful examination, although pressed for time.

That a numerous sect of medical practitioners should grow into existence, become organized into societies, and have schools for medical instruction, embracing all the branches of regular institutions, adapted to their peculiar

tenets, and with a materia medica, to a large extent botanical and indigenous, within ten years past, is certainly a phenomenon in the medical history of the United States of no ordinary interest. To trace out the history of this sect—which calls itself *Eclectic*, and which assumes to be catholic in selecting the good principles and agents of all medical systems—is neither our object, nor are we in command of the proper data to do it correctly; yet it may be well to remark, *en passant*, that had it not have been for Samuel Thompson, who is now so carefully forgotten, and who was the originator of the so-called system of *Thompsonianism*, which a few years since spread over this land like an epidemic, and gained credence with hundreds of thousands, *Eclecticism* would probably have been yet unborn. Thompsonianism formed the material basis, and gave the impetus to botanic medicine; the zealous energy of its early, earnest and bigotted practitioners, spread Thompson's ideas, especially over the Western States; the idea that each individual head of a family should in medicine, as in religion and politics, think and act for himself, presented so inviting an aspect to the yeomen of the land, that his medical system was adopted as a revelation, and Lobelia and Capsicum were extolled as the universal panacea for American diseases. In process of time, the practice fell into the hands of special persons, these became gradually more enlightened and less bigotted, some of them attended the lectures and clinical instruction of the medical schools, and returning among their associates modified their practice. The writings of Beach have doubtless had an influence, and the strong predilection of Prof. Tully, of New Haven, for our indigenous Materia Medica, upon which he dwelt pointedly in his lectures, induced some able men to turn their attention to the botanical practice. Meanwhile, the narrow limits of the Thompsonian Materia Medica had widened; to emetics, stimulants and diaphoretics, cathartics, alteratives and refrigerants had been added; from the universal repudiation of mineral medicines, one after the other of the metallic and saline remedies were introduced, until in modern Eclecticism, with the exception of mercurials, antimonials, arsenicals and some others, the whole range of the metallic Materia Medica, with an extensive array of vegetable medicines, have been embraced, requiring for their description and arrangement the massive volume now under consideration. At present, some half dozen schools teach the doctrines of Eclecticism, and are gradually raising the *status* of their graduates, and it is probable that in a few years they will gravitate more and more towards regular medicine, until they are assimilated, carrying with them some valuable views and agents.

In thus alluding to the origin and progress of Eclecticism, it is with no disposition to decry its merits or bring it into disrespect; but rather as an explanation of what may be esteemed a remarkable episode in the history of American medicine and pharmacy.

Our limits will not admit of a detailed notice of the "Eclectic Dispensatory" of Dr. King. The author remarks:

"It may not be known to some of the readers of this work, that a great

amount of highly important knowledge, in reference to the therapeutic value of remedies, and especially of our Native American plants, has been accumulated by liberal minded physicians in America; which knowledge, owing to various causes, has never yet been sufficiently brought before the medical profession generally, and has not been embodied in the voluminous standard works of Pereira, Wood & Bache, Dunglison, etc. This knowledge being especially American in its origin, and having produced a marked peculiarity in the practice of a large number of American physicians, we deem it proper to style this work the "AMERICAN Eclectic Dispensatory," to distinguish it from other works, which contain only the ideas and views which are common to both American and European physicians."

Our author, after enumerating more than one hundred and twenty indigenous plants, and numerous, so-called *principles*, as aletrin, apocynine, caulophylin, &c., the knowledge of which, he claims as the fruits of eclecticism, remarks:

"The extensive use of the foregoing articles, and their consequent substitution on many occasions, for the favorite remedies formerly in use, constitutes a practical improvement, the value of which, can scarcely be estimated; and the simplest statement of what we believe and know to be true, as regards the superior success in practice, resulting from these improvements in the Materia Medica, would be regarded by those entirely unacquainted with the facts, as the language of extravagant enthusiasm. For their truth, however, we can but appeal to the final tribunal, *universal experience;* and it is partly with the view of facilitating this appeal by candid physicians, that this volume is laid before the public; in which, we trust, every medical reader will find sufficient information, in reference to the favorite remedies of Eclectic physicians, to enable them to enjoy in practice, what we deem the richest fruits of modern clinical experience; constituting the most recent and important practical improvements in the healing art."

These extracts will exhibit that Eclecticism has a good opinion of itself, what ever may be the esteem of others, a trait usual to reformers; yet like many other movements in the same direction, it embraces many old ideas and old agents in new dresses and shapes, commingled with some originality.

But to return to our task. The work is divided into three parts. The first 130 pages, are devoted to a succinct description of the natural orders of plants contributing to the Materia Medica, with the characters of the genera ranged under each, which supercedes the necessity of noticing them in the second part of the work.

The second part, devoted to the eclectic Materia Medica, embraces 840 pages; and describes 540 distinct articles, both vegetable and mineral. Among the latter, are chromic, hydriodic, hydrochloric, nitric, nitromuriatic, phosphoric and sulphuric acids, alum, muriate of ammonia, salts of iron, zinc, lead, potassa, soda, etc., iodine, bromine, sulphur, phosphorus, and many other inorganic bodies. In the description of substances, the author gene-

rally ranges them under their scientific name, and gives the vulgar names after. The specific characters then follow, then the history including habitat, parts used, and chemical characters, followed by an account of the medical properties and uses. A striking feature of this part of the work, is the almost total absence of references to authorities or discoverers, unless they be Eclectic; a stranger to the subject, glancing over these pages, would suppose the Eclectics were a highly scientific and learned body, that they had extensively investigated the chemical relations of their Materia Medica; but this arises from the fact, that the author rarely gives credit to chemical writers and investigators. Long processes for new principles, complex arrays of constituents, and intricate reactions, are numerously given without allusion to their authors, (in most instances,) unless they be eclectics, when they are brought forward in bold relief. The injustice of this course, and its egotistical results, deserve to be pointed out. The author, at the conclusion of the preface, acknowledges his indebtedness to a long list of works, as the U. S. Pharm., U. S. Dispensatory, Pereira, Christison, Dunglison, Mohr and Redwood, Journal of Pharmacy, etc. etc.; but the discoverers and observers themselves, who have given time and talent to eliminate the knowledge of facts, are, in general, left unnoticed. One of the chief difficulties of the author of a Dispensatory is to investigate the accuracy of chemical, botanical and therapeutical statements, and to give the authorities upon which they rest, that the reader may satisfy himself, if disposed; or subsequent authors consult the original memoirs. But our eclectic author feels satisfied to declare results and make assertions, leaving the reader to believe or doubt his statements without redress. One of the most prominent features in that part of Dr. King's work which is strictly eclectic, is the account of the "principles," "resinoids," or "concentrated remedies," which are adopted in their practice. Their nomenclature of these substances is entirely adverse to chemical science, inasmuch as it conveys the idea of distinct neutral proximate principles; when, in most instances, they are merely complex associations of distinct principles, in which one or more predominate, and they seem to have got the idea, that to purify an organic principle, is to strip it of its therapeutic power. Why then is not extract of bark stronger than quinine or cinchonine? or crude resin of jalap more effective than jalapin? Perhaps no one of the eclectic remedies has been more extolled than the resin of podophyllum peltatum, Dr. King claims the discovery of the therapeutic value of this resin, which he had used in an impure state some eighteen years ago. Wm. Hodgson, Jr., had previously isolated this resin in a modified state; but its true nature and place among chemical principles, was not discovered until John R. Lewis proved its close analogy to jalapin in being insoluble in ether; Mr. Lewis, who made his experiments in the summer of 1846, under our directions, isolated podophyllum resin in a colorless state, and we well remember when he imprudently took six grains of it, producing bloody stools, griping and vomiting with much debility. Our author, at page ix. of his preface, remarks, "but unfortunately for the purity and medicinal activity of Lewis's podophyllin,

it requires *six grains to act as an ordinary cathartic*, while that of Merrell requires only half a grain to a grain and a half, thus proving the latter to contain three or four times as much of medicinal activity of the root, as the former."

The *aloesin* of Robiquet, and the *aloin* of the Messrs. Smith, of Edinburg, are described in detail in separate chapters, without any allusion to their discoverers; and so of other principles.

In speaking of ethereal oil (extract) of capsicum, Dr. King states that it is frequently filled with "*crystals* of capsicin in dendroid forms." These apparent crystals are the solid, fatty matter which separates from the ethereal extract, and which has been described by Dr. Plummer, of Richmond, Ind. (Amer. Jour. Pharm. vol. 24 page 32.,) Pure capsicin has never yet been isolated; the so-called capsicin of Bracconot, is a mixture of principles. (See U. S. Disp. 10th edition.)

So far as our examination has extended, we cannot find a single instance in this work of a real chemical analysis of eclectic origin, and the obscure and ignorant manner in which writers in the eclectic journals announce and describe their discoveries, goes to corroborate this. The numerous plants which are brought forward as eclectic remedies, embrace many of undoubted value, and which owe their virtues to distinct principles—chemically distinct—these afford an ample field for discovery. Let correct chemical research be applied, and the impure compounds which now figure as "principles," and which are a stigma on the science of the Eclectics, will soon give way to the true, active, proximate principles where these exist. The graduates of the Philadelphia College of Pharmacy have done more in this field, than any other class of investigators, in the pages of the American Journal of Pharmacy, witness the analyses of Lobelia, Hydrastis, Podophyllum, Rhus, Populus, Veratrum, Prunus, etc.

Having been thus candid, as regards some of the short-comings of Dr. King's book, it would ill become us to pass over the real merits of the work, which embodies a large number of facts of a therapeutical character, which deserves to be studied. Many of these are crude, but yet are capable of being advantageously adopted by physicians, expecially country physicians who have the advantage of more easily getting the plants. To trace much of this knowledge to its original germs, we should have to go back to the Indian tribes and the early settlers of the West, who learned from them, or by accident, the virtues of a large number of our native plants. Quack doctors and herb doctors have aided. We have only to look back in the history of regular Therapeutics, to find a similar origin of the knowledge of some of its valuable remedies; and it is but the other day, since the ignorance of a negro slave started the train of circumstances, which developed the remarkable qualities of the Gelseminum of our Southern States, and which now figures in the list of substances "strictly eclectic." The attention which is now being given by the Eclectics, in classifying and arranging facts and observations relative to American plants, will certainly be attended with excellent results; and we may look for their greater progress

when more real science becomes commingled with their recorded observations.

The third portion of the work, on pharmacy, is arranged as in the United States Dispensatory, with a preliminary chapter on the generalities of practical pharmacy. Eclectic pharmacy is largely indebted to William S. Merrell, a druggist of Cincinnati, who has contributed a chapter to Dr. King's work, on the "Composition of Vegetables and their proximate principles," &c., page 994–1004, and another on the "fluid extracts," at page 1067, in which he has given correct views of the selection and adaption of menstruæ, the means of extraction, etc.; which are the more necessary, as a large number of those who prepare eclectic medicines are inexperienced.

In glancing over this part of the book, one might easily think he was looking at the United States Dispensatory, but he is soon disabused of the error, by meeting with such names as the following: *Extractum Caulophylli Hydroalcohalicum, Extractum Ptelcæ Hydroalc: Ferri et Saliciniæ tartras, Lotio Hydrastis et Aconiti, Pilulæ Podophyllini Comp: Pulv: Leptandrini Comp: Troschisci Dioscoreini,* &c. &c. In fact, the pharmacy of eclecticism proper, is strictly *galenical;* the exact chemical preparations are nearly all those of our shops. Such preparations as *Ferri et morphia citras, Ferri et saliciniæ tartras, Ferri et quiniæ tartras,* which are brought forward as the discoveries of Prof. J. Milton Sanders, are, like the citrate of iron and quinine of our own shops, inexact and empirical preparations, especially when made by the directions given; and it is a little to be wondered at, that so odd and ill assorted a combination as tartrate of iron and morphia should have found the prominent place Dr. King has given it, with so special a parade of the claims of the discoverer.

The galenical preparations, extracts, syrups, tinctures, etc., peculiar to the eclectic dispensatory, are mostly well constructed preparations, containing the virtues of the ingredients used; and we have no doubt that many of them are valuable agents. An account of one of these, Leptandrin, we have copied at page 505, to which the reader is referred.

It would afford us much pleasure to extract a number of other articles from the Eclectic Dispensatory, that would give a better idea of the peculiar views and opinions of this sect of practitioners; but the length of this article admonishes us to stop; yet we cannot close without adjudging to Dr. King the merit of having improved on the works of his predecessors, in giving perspicuity and order to the vast mass of material collected under the name of botanical medicine, and for his determination to oppose the wholesale quackery of eclectic chemical institutes. The eclectics have opened a wide field for the rational therapeutist, and the organic chemist; and we hope that physicians and apothecaries will not be repelled by a false pride or an unjust feeling of contempt, from reaping the harvest which will accrue to observation and experiment. Although the Eclectics have "stolen our thunder" largely, they have also *thundered* a little themselves;

and raised the *status* of a large number, who might have yet been Thompsonians or even quacks, and for this they are to be commended.

As regards the book itself, it is gotten up in a highly creditable manner, is well printed on good paper, and, so far as we have examined, contains but few typographical errors.

Tully's Materia Medica. Nos. 10 and 11.—We have received the tenth and eleventh numbers of Dr. Tully's work, which are occupied mainly in the Proëm to the extensive class "Leāntica," which includes general remarks on the gummy, amylaceous, oleaginous, saccharine, gelatinous and albuminous demulcents. This class has been extended to include a large number of substances (species) not officinal, and it would appear that the author intends it as an encyclopædial reference. The work has already reached the 700th page and has not progressed beyond generalities. At the end of the 11th number it is hinted that the size of the work will reach several octavo volumes, perhaps four or five, consequently it will be impossible to give a fair notice until it has progressed farther. The style is frequently dogmatical, and we think too much rests on the *ipse dixit* of the author. It is however right to bear in mind that the part issued does not reach the regular descriptive chapters. The following quotation will exhibit the author's style, viz.

"{ Morrhua Callarias (*J. G. Wood.*)
{ *Gadus Morrhua* (*Linn.*)

In one edition of the Systema Natura of Linnæus in my possession, the common Cod is called Gadus Morhua, and Gadus Callarias is given as the name of the Torsk. In another edition Gadus Morhua is still given as the name of the Cod, while it is denied that Gadus Callarias is the Torsk, which is said to be Gadus Brosmé. In a comparatively late work, in which the Linnean genus is divided, that genus which contains the Cod is called Morrhua, and this species is called Morrhua Callarias, which seems to make Gadus Morrhua and Gadus Callarias (*Linn.*) the same.

Oleum Jecinoris. Morrhuæ Callariæ.

By the article which immediately precedes, I intend what is commonly prescribed under the name of Cod-Liver Oil, but, as I doubt not, I have referred it to the wrong animal. At least nine hundred and ninety-nine thousandths of all that has been recently employed in medicine, has been derived not from a Fish, but from one or two Sea-Mammals, viz. the following.

{ Physeter Macrocephalus, (*Linn.*)
{ *Catodon macrocephalus* (*Griff. Cuv.*)

Balæna Mysticetus (*Linn.*)

Oleum pinque liquidum, Physeteris macrocephali.

Oleum pinque Balænæ Mysticeti.

These last two Greasy Oils I believe are never used as Leāntics, except as substitutes for Cod-Liver-Oil, though they are undoubtedly as good for this purpose as any other Greasy Oil. People of the Hyperborean Race, I imagine, would make no objection to taking these Oils whenever a Leāntic

should be needed, and would probably prefer them to any other oil which I have mentioned. A very considerable number of physicians within my knowledge, after using what they considered as genuine Cod-Liver-Oil for a comparatively long time, and in connexion with this having opportunity to observe what were considered to be the effects of Sperma Ceti and Whale Oils (so called) have relinquished the employment of the former, and in its stead have adopted the latter two, on the ground that they are just as good, and considerably cheaper. All of these gentlemen profess to think highly of the efficacy of Cod-Liver-Oil; but they have arrived at the conclusion that every other liquid Greasy Oil has the same power and is capable of producing the same effects. For myself, I have watched often and long for the effects of Cod-Liver-Oil (so supposed to be) not prescribed by myself, but by my professional acquaintance, and yet I never witnessed anything but a Leantic, and perhaps nutrient operation. It is true I feel no confidence that it was true and genuine Cod-Liver-Oil that I saw employed; but still I do not imagine that this was of much importance. I have accidentally received information that some large dealers in Cod-Liver-Oil have been in the habit of purchasing large quantities of Lamp Oil of a wholesale establishment in a large city which they never sold as Lamp Oil at their own place of business. I have therefore been in the habit of supposing that true and genuine Cod-Liver-Oil is just about as often sent at the prescription of a physician as true and genuine Wine, by which I mean the pure juice of the grape duly and properly fermented. However, I do not think that the difference between Cod-Liver-Oil and Lamp-Oil is of any material importance, while I should greatly prefer the properly fermented pure juice of the Grape to Turnip-juice and bad Brandy, or any of the more common substitutes for Wine. I never yet had opportunity to converse with a physician who had any notion of what the properties of Cod-Liver-Oil might be properly called."

The interest of Dr. Tully's work increases as it progresses, and we trust he will receive sufficient encouragement to bring it out as rapidly as possible.

The Physician's Visiting List, Diary and Book of Engagements for 1855. Philadelphia. Lindsay & Blakiston.

This useful little annual has again made its appearance, and is ready for serving the medical profession, during 1855, as faithfully as its predecessor has been and is doing the current year.

The attentive use of this diary will induce habits of order and punctuality in individuals whose mental construction gives the opposite tendency, and enables them to overcome the strong temptation to irregularity; besides, it will further their interests by presenting an unmistakable record of their actual services during the day, ready for the ledger in the evening.

The "Diary" is in pocket-book form, neatly covered with leather, and contains a pocket for depositing memoranda. Our medical friends should provide themselves in season.

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TO VOL. XXVI. (VOL. II., THIRD SERIES) OF THE AMERICAN JOURNAL OF PHARMACY.